ISSN 1562 - 5044

Chest & Heart Journal

Volume 27, Number 1 January 2003

CONTENTS

A JOURNAL AND OFFICIAL ORGAN
OF THE CHEST & HEART ASSOCIATION OF BANGLADESH

THE CHEST AND HEART ASSOCIATION OF BANGLADESH

EXECUTIVE COMMITTEE, 2001-2003

President	:	Prof. AKM Shamsul Huq
Vice-President	:	Prof. Emeritus M. Nabi Alam Khan Prof. Md. Mostafizur Rahman Dr. AKM Kamal Uddin
Secretary General	:	Dr. Mirza Mohammad Hiron
Treasurer	:	Dr. Md. Rafiqul Islam
Joint Secretary	:	Dr. Md. Atiqur Rahman Dr. Md. Sayedul Islam
Organising Secretary	:	Dr. Bashir Ahmed
Office Secretary	:	Dr. Md. Naimul Hoque
Members	:	Dr. Asif Mujtaba Mahmud Dr. Biswas Akhtar Hossain Dr. Wahiduzzaman Akhand Dr. AFM Kamal Uddin Dr. Kazi Saifuddin Bennoor Dr. Md. Abu Raihan Dr. Md. Mizanur Rahman Dr. Narayan Chandra Dutta Dr. Md. Zahirul Islam Dr. Golam Sarwar Liaquat Hossain Bhuiyan Dr. Anup Kumar Shaha Dr. Md. Ali Hossain (Ex-officio)

THE CHEST AND HEART JOURNAL

(An official organ of the Chest and Heart Association of Bangladesh)

Volume 27, Number 1, January 2003

EDITORIAL BOARD

Published by : Professor KMHS Sirajul Haque, on behalf of Chest and Heart Association of Bangladesh

Printed at : Asian Colour Printing, 130, DIT Extension Road, Fakirerpool, Dhaka-1000, Bangladesh, Phone : 9357726

Address of Correspondence : The Editor, Chest and Heart Journal.
C/o. Library, Institute of Diseases of the Chest & Hospital.
Mohakhali, Dhaka-1212

THE CHEST AND HEART ASSOCIATION OF BANGLADESH

ACADEMIC CELL

Chairman : Prof. Emeritus M Nabi Alam Khan

Co-Chairman : Dr. Mohammad Enamul Haque

Co-ordinator : Dr. Md. Sayedul Islam

Members :
Prof. Fawzia Akhter Banu
Dr. AKM Mustafa Hussain
Dr. Sohely Rahman
Dr. Khaleda Begum
Dr. Md. Rafiqul Islam
Dr. Sumon Nazmul Hossain
Dr. AFM Kamaluddin
Dr. Abu Rahian
Dr. Quazi Abul Azad
Dr. Kamrul Hasan Milon
Dr. Mirza Mohammad Hiron

RESEARCH & INFORMATION CELL

Chairman : Prof. Dr. Hasina Banoo

Co-chairman : Dr. Muhammad Khurshidul Islam

Co-ordinator : Dr. Md. Solaiman Siddique Bhuiyan

Members :
Dr. Md. Rashidul Hasan
Dr. Asif Mujtaba Mahmud
Dr. AKM Kamaluddin
Dr. Anowara Khatun
Dr. Md. Naimul Haque
Dr. Narayan Chandra Datta
Dr. Md. Yakub Ali
Dr. Md. Zahirul Islam
Dr. Biswas Shaheen Hasan
Dr. Md. Mizanur Rahman
Dr. Barkatullah
Dr. Mirza Mohammad Hiron

CONTENTS

Chest & Heart Journal
Vol. 27, No.-1, January 2003

EDITORIAL

Importance and Justification of Prevention of Cardiovascular Diseases

Prevention of cardiovascular diseases in the high risk individuals based on their risk profile has become increasingly important with improved understanding of the role of risk factors and life style intervention measures, that has stemmed from large number of epidemiological studies and intervention trial of excellence. Preventive cardiology is a term that 'encompasses both the population approach to prevention with public health measures and campaigns, as well as the individually oriented high risk approaches' (Dag S Thelle. President, World Heart Federation and its section on Epidemiolgy and Prevention).'Among the diseases most feared the world over, are heart attacks and stroke. And for good reasons, these diseases of heart and arteries, accounted 12 million lives annually. World wide, they kill more people than any other single disease, and disable millions' (Nakajima H. World Health,January-February;1992).

'It is estimated that in 1997, about 13.4 million premature and preventable deaths among those aged 20-64, were mostly attributable to chronic non-communicable diseases like cardiovascular diseases, including ischaemic heart disease and stroke, cancers, chronic obstructive pulmonary disease and diabetes mellitus. Of total mortality in member states of WHO, 'The ten leading causes of mortality estimates for 1999 in order of rank are;1.Ischaemic heart disease:12,7 %. 2.Cardiovascular disease: 9.9 %. 3.Acute lower respiratory infection:7.1%. 4.HIV/AIDS: 4.8%. 5.Chronic obstructive pulmonary disease: 4.8%, 6.Perinatal condition: 4.2. 7.Diarrhoeal diseases: 4.0 %. 8.Tuberculosis: 3%. 9.Road traffic accident: 2.2 %. 10.Cancer of trachea/bronchus/lung: 2.1 % (WHO Report,2000;WHO, South-East Asia Region, 2001). Increasing the share of non-communicable disease burden globally, it would rise to 73% in 2020 from 43% in 1998. Total numbers of strokes and CHD events are typically increasing. More so is the rapid development of the 'second wave' epidemic of cardiovascular disease that is now flowing through developing countries. It is increasing so rapidly that, 'the disease of today will be epidemic of tomorrow' to 'rank No 1 and No 4 respectively as cause of the global burden of disease by the year 2020' (Uemura, et al,1988). Heart attacks and stroke will kill 12.5 million people a year and ischaemic heart disease will be the largest single cause of global burden of disease by 2020 (WHO, South-East Asia Region, 2001). Obesity, classified as a disease, is also becoming one of the more important contributions of ill-health.

'The rising prevalence of non-communicable diseases is driven by increasing change of life style, characterized by inappropriate diets, sedentary habits, smoking and increase alcohol consumption (WHO, South-East Asia Region (2001), and are 'progressively diffusing across the the social spectrum to affect also the poor and rural section of the population' (WHO, South-East Asia Region, 2001). Once rife in the industrialized world, is now a rapidly growing problem in developing countries, that are fast catching the life style of modernized world, and is increasingly suffering from diseases of affluence. Western life styles are invading the developing world fast and bringing with them an eptdemic of non-communicable diseases. Cardiovascular diseases are not communicable, but the adoption of unhealthy life style, food and sedentary habit, smoking, all of risky behaviours, are very much so. Such unhealthy behavioural change need not be a reflection of socio-economic progress that leads to 'disease of affluence'- a price to pay for luxery and comfort, at the cost of quality of life.

Food habits and taboo result from interaction of climate and culture that are not inborn. Most are traditionally carried out from generation to generation and learned and acquired in later life.These are the most stable element of cultural behaviours. Change of food habits is a slow process and a challenging job to be carried out through

education and knowledge. There is an urgent need to be aware of how diet and nutrition function and to consciously encourage those eating habits that can promote healthy living.

Life style is the way of life- characterized by how we live and behave; react to surroundings- obsessed by stress and tension or dissipate by relaxation; anger- often with violent reaction or working it off; attitude towards life- unhappy and distressing or with positive thoughts; the way we think- hostility, cynicism, despise and ill or thinking good, empathy and doing something good to others; fast life- hectic and often at top speed; strenuous business activities- often working long hours or disciplined, regulated and relaxful life; sleeplessness or sound sleep; food habits and pattern of food eaten as reflected by inappropriate or appropriate diet; striking a balance between energy intake and expenditure- maintaing proper weight or becoming obese; sedentary habit or physical activity; smoking and increase of alcohol consumption and such others.

Changing life style including sedentary way of life of a portion of population have contributed to increased obesity and emergence of 'life style' related diseases, such as coronary heart disease, hypertension. diabetes and various forms of cancers. Central obesity accompanied with visceral fat is increasingly associated with hypertension, hypertryglyceridemia, diabetes and coronary heart disease (Rim,et al;1995). Visceral fat is metabolically more active, increasing hepatic exposure to free acids and decreases insulin sensivity. Physical activities, apart from control of risk factors of various diseases, is linked with a more favourable fat distribution- lower proportion of visceral fat at any given body mass indices.

Electrocardiograph (ECG) was invented in 1920 by Dutch physiologist Willen Eimthoven, a technology that is helpful in characterizing heart disease and in prediction of the probabilities of cardiovascular events. The sphygmomanometer was invented in the late nineteenth century to measure blood pressure, detecting hypertension. Of late, a great stride has been made in the development of various potent drugs including anti-hypertensives. The emergence of bypass surgery in the mid 19th century is a hall mark in the spectacular progress of medical science for myocardial revasculaization.

In spite of invention of sophisticated diagnostic tool, advancement in pharmacological and surgical interventions, cure of CVD is a far cry, when fully blown. Prevention offers the only answer to contain the ever growing challenge of CVD of the millenium. Versehuren,et al (2001) presenting their paper in 5th International Conference on Preventive Cardiology "Primary Prevention of Coronary Heart Disease: 'Quantitative comparison of Pharmacological Versus Non-Pharmacological Cholesterol Lowering' "(by lowering of intake of saturated fat and reducing the number of smokers among the high risk group) yielded 7 times more preventive events than the pharmacological approach. Addition of excercise and other risk factors intervention is apt to improve the result. Synthetic lipid lowering agent is indicted as an adjunct to life style and dietetic intervetion including exercise to reduce elevated LDL and trigyceride. Sadly though, it has become the main stay of treatment in most of the prescription, to the utter neglect of life style intervention.

'Over the psat three decades in the US, mortality from CVD declined by 40%. One-third of that decline is attributable to technological advances, such as clot-dissolving and anti-hypertensive drugs, intensive care units, coronary angioplasty and bypass surgery. Two thirds are attributable to measure such as diets to reduce calories, fats and salts, improved control of hypertension, the growing popularity of fitness exercises, and smoking cessation- all of which have nothing to do with drugs' (Ivan Gyafas,World Health,Jan-Feb,1992). However, aspirin in primary and secondary prevention, anti-hypertensive drugs, thrombolytics (clot blusters) and coronary artery surgery in myocardial revascularization have played important role in secondary prevention including the drugs available for rheumatic fever and rheumatic heart disease.

Risk factors are modifiable. Being multifactorial, has to be dealt with a holistic approach. One problem, one solution is grossly inadequate. It has to be replaced by a strategy of comprehensive (holistic) approach. It is imperative that practicing physicians and cardiologists should develop interest in preventive cardiology pari-passu with practice of clinical medicine. No concentious physician can remain oblivious of the special need of the

preventive medicine of the community any more than they can remain in isolation from the society as a whole. It is the moral obligation of every physicians to be informed, and to inform and motivate their clients towards prevention, promote friendly rapport with empathy, create trust and confidence; and cure and alleviate sufferings at the earliest opportunity, before the disease is full-blown. Preventive Cardiology is simple, inexpensive, cost effective and is not extravagantly drug oriented. More over, patients are many, but service facilities are grossly inadequate.

*Let us take a vow 'to extend the benefit of prevention to all'.

Prof. A.Q. Khan
Guest Editor: Formerly; Professor of Epidemiology, National Institute of Social and Preventive Medicine, Director, Malaria Institute and Institute of Epidemiology Disease Control and Research, Additional Director General of Health Services; Founder President, Epidemiological Association of Bangladesh. Tel.8627525. E-mail: aqk@bangla.net

References:

1. Khan AQ. Epidemiology and Disease Control, 2nd Ed. (in monographic series). Preventive Cardiology, Part IV, 1999.
2. Idem. Epidemiology and Disease Control, 2nd Ed.(in monographic series). Exercise and Obesity Control. Part V, 1999.
2. Idem 1999. Epidemiology and Disease Control, 2nd Ed.(in monographic series). Fight Against Cancer. Part VI, 1999.
4. WHO, South-East Asia Region. Noncommunicable Diseases: Prevention and Management 2001.
5. Rim EB et al. Body size and fat distribution as predictors of coronary heart disease among middle aged and older US men. Am.J of Epid, 1995; 12 : 1117-26.
6. Uemura K, et al (1988). International trends in cardiovascular diseases in the elderly. Eur Heart J, 1988; 9 (Suppl D) : 1-8.
7. Versehuren MW, et al 2001. Primary Prevention of Coronary Heart Disease: Quantitative comparison of Pharmacological Versus Non-Pharmacological Cholesterol Lowering; 5th International Conference on Preventive Cardiology, Abstract No. 036.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

ORIGINAL ARTICLES

Effect of Dietary Advice on Myocardial Infarction Patients

Umme Lutfa Habiba, Md. Moksed Ali Pramanik, Md. Nizamul Hoque Bhuiyan Nur Ahmed, Shah Md. Keramat Ali

Summary :

A total of 60 myocardial infarction patients in two groups (study 30 and control 30) were studied to find out the effect of dietary advice. The age of the subjects ranged between 40 - 60 years. Their height, weight and blood pressure were measured and biochemical analysis of the blood samples were done for lipid profile and glucose. Patients history and normal food intakes were taken by 24 hours recall method. Study group received a diet sheet with advice to increase fiber intake (mainly soluble fiber) and control group received none except the treatment given by the cardiologist. After 3 months all baseline parameters and blood lipids were again estimated for both groups.

Mean age of the study and control groups were 50.43±5.90 and 49.73±6.40 years respectively. There was no significant difference between the two groups in any of the baseline parameters.

Energy and fat intake in study group were reduced by 169.4 kcal and 2.5 gm respectively whereas in control group reduced by 47.4 kcal and 2.0 gm respectively. Protein and fiber intake in study group were increased by 22.4 gm and 13.0 gm respectively. Increase of fiber intake in study and control groups were 83.9% and 16.1% respectively. After 3 months 20% of study and 15.8% of control group showed reduction of systolic blood pressure while 42.8% and 14.3% of study and control group showed reduced diastolic blood pressure respectively. More than 58% of study group and about 36% of control group reduced their BMI. After 3 months, reduction of total cholesterol, LDL, TG and Glucose level in study group were higher than those found in control group. HDL level in study group increased more in study group (8.6%) than that of control group (7.2%). The study revealed that dietary advice can bring about significant change in serum lipid levels for the secondary prevention of myocardial infarction.

***Key word** : Dietary advice; Myocardial infarction*

[Chest & Heart Journal 2003; 27 (1) : 4-9]

Introduction :

Myocardial infarction is the second major cause of death among adult hospitalized patients. The association between the incidence of coronary artery disease (CAD) and total plasma cholesterol is well documented[1-4]. Modification of dietary habit including lifestyle change plays a vital role in the therapy for myocardial infarction. The effect of dietary and lifestyle modification is largely unknown. So the study was carried out with the objectives to measure the changes in total cholesterol, low-density lipoprotein (LDL) and high-density lipoprotein (HDL) cholesterol, after three months of strict adherence to dietary advice and close monitoring of patients who already have an attack of myocardial infraction in hospital and home settings.

Materials and Methods :

a . Place and Period of Study:

The study was carried out at National Institute of Cardiovascular Diseases Hospital, Dhaka (NICVD), between October 1, 1993 and December 30, 1995 among the hospitalized subjects who had an attack

Institute of Nutrition and Food Science, University of Dhaka

of acute myocardial infarction (AMI) and was admitted into NICVD for necessary treatment.

b. Selection of Subjects:

Out of 300 AMI patients admitted in NICVD Hospital during this period only 60 patients between 40 and 60 years who were non-diabetic; had no chronic liver disease, malignant disease, or renal failure; living in Dhaka city and consented to be entered into the trial were included in this study. After selection , the patients were divided into two groups (1) study group, and (2) control group of equal number.

c. Methods:

At the base line body weight, height and blood pressure of all the subjects were measured, and a sample of blood was collected for blood lipids estimation by standard method. Dietary intake pattern was assessed by 24 hours recall method. All smoker subjects of the study group were advised to give up this bad habit and hypertensive patients were asked to avoid taking extra salt. The study group was given adequate advice and an appropriate need-based diet chart was developed and supplied to them. They were asked to increase fiber in their diets from vegetable, fruits and complex carbohydrate foods and also to use only vegetable oil for cooking. They were permitted to eat sea fish, poultry without skin, citrus fruits, tomato, apple, green leafy vegetables and non-fat milk, yogurt, small fish and limited two eggs without yolk per week. The control group, however, were not given any of the above advice but both the groups received normal or regular drug treatment as advised by the cardiologist. After one month and at the end of three months height, weight and blood pressure were again measured, and a blood sample was also drawn to assess changes in level of serum lipids.

d. Data Analysis:

The obtained data were analyzed by computer-based software programme with statistical analysis as needed. The results were expressed as mean ± SD and percentage, and Z-test and proportion tests were applied.

Results :

Sixty myocardial infract patients were studied. Baseline parameters of study and control group show that there was no significant difference in age, height, weight, BMI, BP, TC, LDL, HDL, and TG between the two groups (Table-I).

Table I

Baseline parameters compared between study and control groups

Parameters	Study (n=30)	Control (n=30)	P- value
Age (years)	50.43±5.9	49.73±6.4	NS
Height (cm)	163.60±7.4	161.90±7.4	NS
Weight (kg)	64.80±7.9	63.60±9.3	NS
BMI (kg/m2)	24.20±2.3	24.20±3.1	NS
Blood pressure (mmHg):			
Systolic	134.8±27.4	136.5±24.4	NS
Diastolic	89.8±27.4	90.7±10.7	NS
Lipids			
TC (mg/dl)	252.9±75.1	236.9±40.4	NS
LDL (mg/dl)	180.6±50.5	160.6±39.9	NS
HDL (mg/dl)	40.1±8.2	39.3±9.4	NS
TG (mg/dl)	293.0±177.3	217.1±96.4	NS
Glucose (mg/dl)	115.1±34.4	109.7±27.5	NS

NS = Not significant at 0.05 level

Table II shows that energy and fat intake of study group were reduced by 169.4 kcal and 2.5 gm whereas those for control group were reduced by only 47.4 kcal and 2.0 gm respectively. On the other hand, protein and fiber intake increased in both groups –in study group increased by 22.4 gm and 13.0 gm whereas in control group increased by 17.3 gm and 3.3 gm respectively.

Figure 1 shows the changes of fiber intake after intervention over usual intake. It was found that that fiber intake in study group significantly increased by 83.9 % (P<0.05) when compared to the proportion of no change (16.1%). On the other hand, increase of fiber intake (22.4%) in control group was significantly lower (P<0.05) when compared with the proportion of no change (77.6%).

Table III shows the change of clinical factors among study and control groups. After intervention it was found that 20% of study subjects while15.8% of control subjects showed reduction of systolic blood pressure (systolic <140 mmHg). On the other hand, 42.8% of study subjects and 14.3% of control subjects showed reduction of diastolic blood pressure (diastolic <90 mmHg). This Table also showed that 9 (90%) smokers out of 10 smokers in study group stopped smoking whereas 16 (88.8%) smokers out of 18 control smokers given up smoking. More than 58% of the subjects of study group and 50% of control group have reduced their body weight. (< 25 BMI).

Total cholesterol, LDL cholesterol and Triglyceride (TG) level of both study and control groups highly significantly (P<0.001) decreased after 3 months of the study (Table IV). Glucose level of both study and control groups though decreased but insignificantly (P>0.05). HDL cholesterol level of study group significantly increased (P<0.05) whereas in control group it increased but insignificantly (P>0.05).

After 3 months reduction of total cholesterol, LDL cholesterol, TG and Glucose level of study group respectively were higher compared to those of control group, while increment of HDL cholesterol was lower in control group compared to that of study group (Table V).

Table-II

Change of nutrients intake (person per day) of study and control groups after intervention

Groups/ Nutrients	Baseline (Mean±SD)	After 3 months (Mean±SD)	Difference (Mean±SD)	Change (%)
		Study group		
Energy (kcal)	2084.7±247.1	1915.3±187.2	-169.4±201.2	8.1
Carbohydrate (gm)	343.0±21.1	295.3±32.6	-47.7±26.5	5.8
Protein (gm)	73.4±10.5	95.8±9.4	+22.4±8.8	5.9
Fat (gm)	46.4±11.7	43.9±6.8	-2.5±7.2	0.1
Fiber (gm)	15.5±2.8	28.5±1.1	+13.0±2.2	83.9
		Control Group		
Energy (kcal)	2080.0±262.5	2032.6±248.5	-47.4±252.2	2.3
Carbohydrate (gm)	338.0±17.8	310.1±41.8	-27.9±35.1	4
Protein (gm)	77.0±12.7	94.3±12.2	+17.3±11.9	4
Fat (gm)	47.2±11.2	45.2±9.1	-2.0±11.0	0.2
Fiber (gm)	14.7±1.8	18.0±3.6	+3.3±2.2	22.4

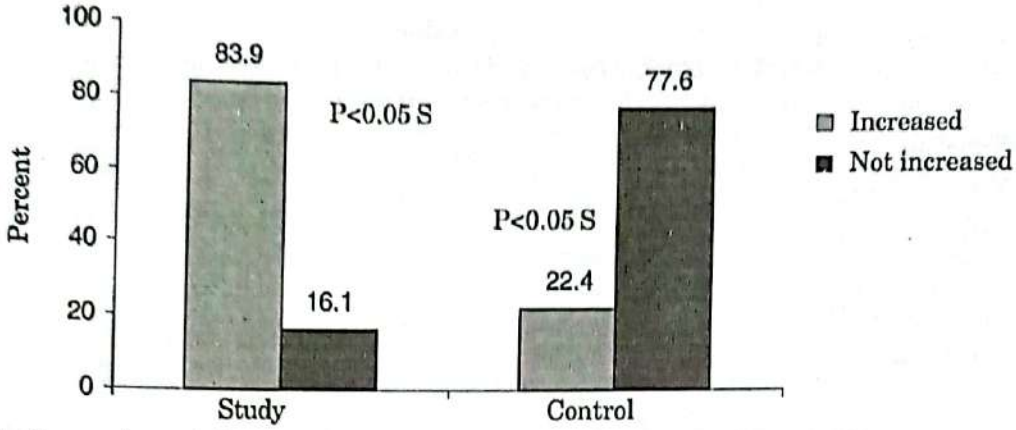


Fig.-1: *Comparison of fiber intake by study and control groups after intervention*

Table-III

Change of Blood pressure and BMI among study and control groups

Parameters of hypertension	Study group						Control group					
	First visit		Last visit		Change		First visit		Last visit		Change	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Systolic <140mmHg	20	66.7	24	80.0	4	20.0	19	63.3	22	73.3	3	15.8
Diastolic <90mmHg	7	23.3	10	33.3	3	42.8	7	23.3	8	26.7	1	14.3
Smoker (≥10 cigarettes/day)	10	33.3	1	3.3	9	90.0	18	60.0	2	6.7	16	88.9
Overweight BMI (kg/m^2) = > 25	12	40.0	5	16.7	7	58.3	14	46.7	9	30.0	5	35.7

Table-IV

Total cholesterol, LDL, HDL, TG and Glucose level of study and control groups compared between baseline and after 3 months

Variables	Baseline (Mean±SD)	After 3 months (Mean±SD)	Difference (Mean±SD)	P-value
	Study group (n=30)			
Total cholesterol level (mg/100 ml)	252.9±75.1	216.3±44.9	-36.6±39.6	P<0.001 **
LDL-c (mg/100 ml)	162.7±39.9	136.1±30.7	-26.6±33.8	P<0.001 **
HDL-c (mg/100 ml)	39.3±9.4	42.8±10.6	+3.4±7.4	P<0.05 *
TG (mg/100 ml)	293.0±177.4	207.6±132.9	-85.4±98.5	P<0.001 **
Glucose level (m mol/L)	115.1±34.4	103.3±23.0	-11.8±33.1	P>0.05 NS
	Control group (n=30)			
Total cholesterol level (mg/100 ml)	236.9±40.4	203±21.4	-33.5±31.4	P<0.001 **
LDL-c (mg/100 ml)	180.6±50.5	156.8±43.9	-23.8±31.4	P<0.001 **
HDL-c (mg/100 ml)	40.1±8.2	43.0±8.2	+2.8±8.3	P>0.05 NS
TG (mg/100 ml)	217.1±96.4	162.3±79.9	-54.8±65.4	P<0.001 **
Glucose level (m mol/L)	109.7±27.5	100.0±17.5	-9.7±30.4	P>0.05 NS

** highly significant * significant NS = not significant

Table-V

Percent of change of lipids and Glucose level compared between study and control groups after intervention

Variables	Study group	Control group
Total cholesterol level	(-ve) 14.5	(-ve) 14.1
LDL – c	(-ve) 16.3	(-ve) 13.2
HDL – c	(+ve) 8.6	(+ve) 7.2
Triglyceride (TG)	(-ve) 29.0	(-ve) 25.2
Glucose level	(-ve) 10.2	(-ve) 8.8

-ve decreased, +ve increased

Discussion :

The sample size of this study was small because of death, discontinuation and migration of the patients from the trial. Both study and control subjects were found to have similar age, height, BMI, blood pressure and lipid profile at baseline and there existed no significant differences between the two groups (Table-I). They were also found to consume almost similar amount of calories, carbohydrates, protein, fat and dietary fiber and the proportion of calories from three proximate principles were also found similar in both groups (Table-II). After educational intervention calorie, carbohydrate and fat intake reduced more in study groups while fiber intake increased in this group by 83.9% and a reasonable difference was achieved between daily fiber intake of the study group (28.5 gm) and control group (18.0 gm). Similar results were found by Burr *et al*[5].

After intervention, study group showed positive changes of factors associated with MI (Table-III). Our dietary advice showed favorable effect on blood pressure of the hypertensive patients. High fiber diet may be mildly hypertensive, vegetarians exhibited lower blood pressure than nonvegetarians[6]. We found that 9 out of 10 smokers of study group gave up smoking. The Oslo study also found consumption of tobacco fell about 45% more in the intervention group than in the controls[7]. The Coronary Drug Project reported that after occurrence of one or more MI, cessation of cigarette smoking improved long-term prognisis[8]. Weight losses were observed in both the groups as 58.3 % of study group and 35.7% of the controls showed reduction of body mass index below 25. Similar weight reductions were found in studies conducted by Jenkins et al[9].

We found that both the groups showed highly significant decrease in total cholesterol, LDL-cholesterol and triglyceride concentrations (Table-IV). Reduction of total cholesterol, LDL cholesterol and TG of study group were higher than those of control group (Table-V). For each 1% reduction in the serum cholesterol level, a 2% reduction in the incidence of CHD is expected[10-11]. So, 14.5% reduction in total cholesterol found in our study should reduce CHD risk by 29%. In our study, HDL cholesterol increased (8.6%) in study group significantly ($P<0.05$). Some reduction in HDL-cholesterol was associated with many of the currently recommended dietary changes that reduce serum lipid levels[12]. Each 1 mg/dl increase in HDL cholesterol from baseline was associated with a 4.4% reduction in CHD risk[13].

Increased fiber intake by 83.9% (13 gm) in study group might have reduced total cholesterol (Table-II). It has been suggested that a 5 to 10 g increase in dietary soluble fiber will reduce serum total cholesterol by approximately 5%[14].

The observed lipid changes in this study provide additional support for dietary advice to increase the intake of foods rich in soluble fiber. Similar lipid changes were noted in studies on the regression of human artheriosclerosis that incorporated dietary change[15-17].

Dietary advice after an attack of MI showed beneficial effect. Dietary advice can encourage the public to modify their eating habits towards eating more complex carbohydrate, vegetables and fruits and may reduce the serum cholesterol level in patients of myocardial infraction, thus bring about expected 29% reduction in the risk of CHD for prevention of myocardial infarction in Bangladesh.

References:

1. Bangladesh Bureau of statistics. Pocket year book 2000 published in 2002; 370.
2. Keys A, Aravanis C, Blackburn H, Buchem FSP, Bujina R, Djordjevic BS, et al. Probability of middle aged men developing coronary heart disease in five years. Circulation 1972; 45:815-28.
3. Pooling Project Research Group. Relationship of blood pressure, serum cholesterol, smoking habit, relative weight and ECG abnormalities to incidence of major coronary events. Final report of the Pooling Project. J Chronic Dis 1978; 31:201-306.
4. Levy RI. Cholesterol and coronary artery disease. What do clinicians do now? Am J Med 1986; 80:13-22.
5. Burr ML, Fehely AM, Gilbert JF, Rogers S, Holliday RM, Sweetnam PM, et al. Effects of changes in fat, fish and fiber intakes on death and myocardial reinfarction: Diet and Reinfarction Trial (DART). Lancet 1989; 30:757-61.
6. Sacks FM, Rosmer B, Kas EH. Blood pressure in vegetarians. Am J Epidemiol 1974;100:390-8
7. Hjermann I, Byre KV, Holme I, Leren P. Effect of diet and smoking intervention on the incidence of coronary heart disease: report from the Oslo Study Group of a Randomized Trial in Healthy Med. Lancet 1981; 12:1303-10.
8. Coronary Drug Project Research Group. Cigarette smoking as a risk factor in men with a prior history of myocardial infarction. J Chronic Dis 1979; 32:415-25.
9. Jenkins DJ, Wolever Tm, Rao Av. Effect on blood lipids of very high intakes of fiber in diets low in saturated fat and cholesterol. N Engl J Med 1993; 329:21-6.
10. Lipid Research Clinics Program. The Lipid Research Linic's Coronary Primary Prevention Trial Results. II. The relationship of reduction of incidence of coronary heart disease to cholesterol lowering. JAMA 1984; 251:365-74.
11. Lipid Research Clinics Program. The Lipid Research Linic's Coronary Primary Prevention Trial Results. I. Reduction in incidence of coronary heart disease. JAMA 1984; 251:351-62.
12. Schaefer EJ, Levy RI, Ernst ND, Van Sant FD, Brewer HB Jr. The effects of low cholesterol, high polyunsaturated fat, and low fat diet on plasma lipid and lipoprotein cholesterol level in normal and hypercholesterolemic subjects. Am J Clin Nutr 1981; 34:1758-63.
13. Gordon DJ. Ekelund LG, Karon JM. Predictive value of the exercise tolerance test for normallity in North American men: the Lipid Research Clinics Mortality Follow-Up Study. Circulation 1986;74:252-65.
14. Brown WV. A review of the cholesterol-lowering effects of soluble fiber. Presented at the second international conference on preventive cardiology. Washington DC, June 18-22, 1989.
15. Omish D, Brown SE, Scherwitz LW. Can lifestyle changes reverse coronary heart disease? The Lifestyle Heart Trial Lancet 1990; 3369: 129-33.
16. Blankenborn DH, Johnson RL, Mack WJ, el Zein HA, Vailas LI. The influence of diet on the appearnce of new lesions in human coronary arteries. JAMA 1990; 263:1646-52.
17. Watts GF, Lewis R, Brunt JHN. Effects on coronary artery disease of lipid-lowering diet, or diet plus cholestyramine, in the St. Thomas' Atherosclerosis Regression Study (STARS). Lancet 1992; 339:563-9.

Chest & Heart Journal
Vol. 27, No. 1, January 2003

Beneficial Effect of Closed Mitral Commissurotomy (CMC) : Immediate Results in 50 Cases

Prabir K. Das[1], RS Mahmood[2], KHS Sirajul Haque[3], M Allmuzzaman[4], MN Islam[4]

Summary :

The present study was done to show the beneficial effect of closed mitral commissurotomy (CMC) in patients with pure mitral stenosis in the National Institute of Cardiovascular Diseases (NICVD), Dhaka, during the period of June 1994 to Dec 1995. Fifty consecutive patients with pure mitral stenosis (MS) who subsequently underwent closed mitral commissurotomy (CMC) were selected for the study. There were 24 male and 26 female with a female preponderance over male in the ratio of 1.08:1. Age range was from 12 to 45 years (mean age 24.47±18.84 yrs). Selection of patients was done by clinical and diagnostic evaluation including Doppler echocardiography. CMC was performed with, transventricular Tubb's dilator with an average dilatation of 30.6 mm. In accordance with the New York Heart Association (NYHA) classification, 17 patients (34.0%) were in NYHA lass II, 29 patients (58.0%) were in class III and 4 patients (8.0%) were in class IV. None of the patients were in NYHA Class-I. At time of discharge from hospital, 12.1 ± 3.9 days after the procedure (avery 2 weeks after valvotomy) results of valvotomy was evaluated clinically, which revealed that 27patients (54.0%) were in class I, 18 patients (36.0%) were in class II and remaining 5 patients (10.0%) were in class III. There was significant symptomatic improvement in NYHA class status. This improvement was matched with significant improvement in Doppler parameters.

***Key words** : CMC, beneficial effect*

[Chest & Heart Journal 2003; 27 (1) : 10-13]

Introduction :

Rheumatic fever and resulting rheumatic heart diseases are the most frequent cardiac disease in Bangladesh. Isolated mitral stenosis occurs in approximately 25 to 50 percent of all patients, with rheumatic heart disease[1] CIVIC offers gratifying results in properly selected symptomatic patients with pure MS. It was the earliest surgical approach used; which is performed through a thoracotomy (without a cardiopulmonary bypass) and atriotomy with a metallic valve dilator. Symptomatic improvement provided by CIVIC can be assessed by clinical evaluation on short term follow up (at discharge) and the anatomic and haemodynamic improvement assessed by Doppler echo-cardiographic examination.

In this study beneficial effect and immediate result of CIVIC on 50 patients has been described.

Materials & Methods :

Fifty consecutive patients of pure mitral stenosis admitted to the mitral commissurotomy (CMC) department of cardiology and cardiovascular surgery, NICVD were selected, who subsequently underwent Informed consent were obtained from all patients. Clinical parameters and results of laboratory finding were recorded in a specially prepared data entry form.

The patients were evaluated clinically with special reference to dyspnoea, paroxysmal nocturnal dyspnoea (PND), fatigue, chest pain, haemoptysis and oedema etc, New York Heart Association (NYHA) functional class grading of all patients were made.

Inclusions criteria

The selection of patients were based on

(a) Clinical history and findings of physical examination

1. Comilla Medical College
2. Dhaka Medical College
3. Bangabandhu Sheikh Mujib Medical University, Dhaka
4. National Institute of Cardiovascular Diseases (NICVD), Dhaka.

(b) Electro cardiographic findings.
(c) Radiological findings.
(d) Echocardiographic findings including Doppler examination.

Exclusion criteria

(a) Patients with associated significant valvular or congenital heart disease

(b) patients with history of embolic phenomena in previous 6 months.

Echocardiographic studies including Doppler examination was undertaken within 2 weeks of the procedure in all patients for final selection of patients suitable for valvotomy and for ascertaining their haemodynamic significance. In each case, M-mode and 2D-echocardiography and Doppler were performed to assess the severity of mitral stenosis. The valve area was determined by planimetry on short axis view and by Doppler half time method[2] and the transmitral peak pressure gradient was calculated from the continuous wave Doppler velocity tracing obtained across the mitral valve in all patients before and after the procedure.

Closed mitral commissurotomy was undertaken after an average of 20 ± 3.2 days of admission. Dilatation was done with Tubb's dilator. Left atrial appendix was removed in all patients during the procedure. Transient bilateral carotid compression was applied in patients with atrial fibrillation to remove danger of cerebral embolism. All patients made a good postoperative recovery. Clinical evaluation was repeated at the time of discharge (i.e. 12.1 ± 3-9 daye after CIVIC) with special reference to NYHA functional status. It was accompanied by echocardiographic examination including Doppler.

Statistical analysts

Numerical values were expressed as mean ± SD. Students 't' test (paired) was utilized to see the significance of difference within groups. P<0.05 was taken as minimal level of significance.

Results :

There were 24 male and 26 female. Age ranges was 12 to 45years (mean 24.47 ± 8.84 yrs) Duration of symptoms varied from 6 month to 15 years (average 13 month).

After clinical and diagnostic evaluation, the categories of patient undergoing CMC were as follows

Table I
Categories of patients (n = 50)

	No	Percentage
mitral stenosis e PH	34	68.0
mitral stenosis PH e TR	9	18.0
mitral stenosis PH e MRgr1	15	30.0
mitral stenosis PH e PR	2	4.0

PH = pul hypertension, TR = tricuspid regurgitation, MR = mitral regurgitation, PR = pulmonary regurgitation.

Dilatation with Tubb's dilator followed by subsequent finger assessment revealed that 17 patients had dilatation upto 50 mm, 11 patients had dilatation upto 25mm, 13 patients had dilatation upto 32.5 mm and 9 patients had dilatation up to 35 mm. Average dilatation was 30.6 mm.

Functional status (NYHA class) assessment of patients before and 12.1 ± 3.9 days (i.e at discharge) after CM C were as follows preoperatively, 17 patients (34.0%) were in NYHA Class II, 29 Patents (58.0%) were in NYHA class III and 4 patients (8.0%) were in NYHA class IV. Postoperatively. NYHA functional assessment revealed that 27 patients (54.0%) were in NYHA Class I 18, patients (36.0%) were in NYHA class II, and remaining 5 patients (10.0%) were in NYHA Class III.

There was significant improvement in functional status. This improvement was matched with significant improvement in anatomic and haemodynamic parameters found on Doppler echocardiographic study.

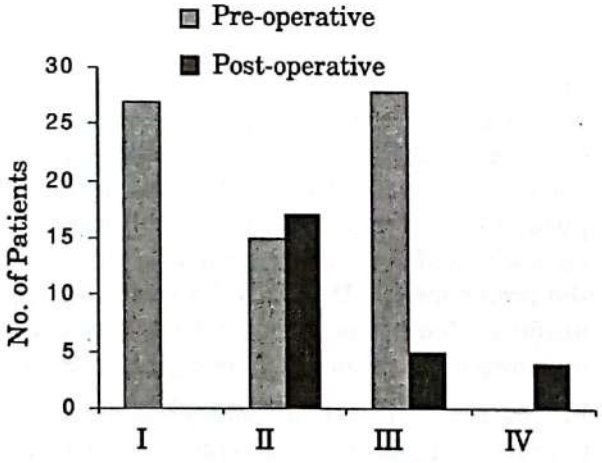


Fig-I : *Pre and post operative results based on NYHA classification (n=50)*

Table-II

Doppler parameters before and after valvotomy (n = 50)

Doppler parameter	preoperative ,	postoperative	p-value
Mitral flow velocity (m/see)	2.33 ± 0.46	1.40 ± 0.4	< 0.05
PHT (msec)	258.57± 68.19	95 ± 7.54	< 0.01
PPG (mmHg)	22.75 ± 6.54	12.45 ± 2.2	< 0.01
MVA (Cm2)	0.88 ± 0.16	2.26 ± 0.31	< 0.01
PASP mmHg	89.11 ± 18.24	75.24 ± 12.88	< 0.05
MR gr1	10%	20%	n.s

PHT = pressure half time, PPG = peak pressure gradient, MVA = mitral valve area PASP pulmonary artery systolic pressure, MR = mitral regurgitation.

Discussion :

CMC is the mainstay of treatment of rheumatic mitral stenosis in developing countries[3]. It has been done in Bangladesh since 1982. Although, over the last fifteen years, balloon mitral valvuloplasty has become an acceptable alternative to surgical commissurotomy[4,5] the cost of the balloon catheter still limits its application in developing countries which are precisely the countries with the hightest incidence of mitral stenosis Consequently, the balloon catheters, despite being provided as disposable caitheters are reused several times, thus carrying potential hazards to imperfect sterilization and decreasing performance Hence, CIVIC still continues and will probably continue to be an option for patients with MS in our Country.

For proper selection of patients for CMC, detailed echocardiographic assessment is vital. In this study, 2-dimensional echocardiography provided information regarding valvular anatomy, estimation of left atrial size and exclusion of left atrial thrombus, estimation of left and right ventricular function etc. Doppler study provided data regarding the functional significance of MS such as transmitral peak pressure gradient, pulmonary artery pressure, presence and significance of any regurgitation before and after the procedure etc. Doppler echo was especially useful to denote the beneficial effect of CMC regarding improvement in haemodynamic aspects.

In our series, patients had significant symptomatic improvement after CMC. Twenty seven patients (54.0%) were it NYHA functional class I, 18 patients (36.0%) were in class II and 5 patients (11.0%) were in class III. the significant increase in mitral valve area and the improvement in symptom status (NYHA class) achieved with CIVIC in this study are similar to the findings reported earlier by Nair et al[6]. There was no mortality in our series. Arora et al[7] reported a mortality of 2% which may have been due to inclusion of patients with severe pulmonary hypertension who died of persistent low output state and intractable arrhythmia after surgery. There were no instances of cerebrovascular accident or excessive bleeding from site of thoracotomy. Ten percent patents had procedure induced mitral regurgitation (gr. 1) on Doppler colour flow imaging. This is comparable to the findings of Nair et al

In our study there was significant haemodynamic improvement by CMC on short term follow up. Turi et al[8] in a study involving 10 patients found comparable haemodynamic improvement with CMC and mitral balloon procedure Arora et al[7] found almost similar immediate result after CMC and balloon valvuloplasty. Manabe et al[9] also observed comparable clinical improvement after valvotomy in young patients with rheumatic MS. In as much as both procedures relieve valvular stenosis by affecting commissural splitting, the short term results and the restenosis rate may be expected to be similar.

Recently, a percutancers metallic valvotome[10] has been developed which principle is basically similar to the Tubb's dilator used for CMC. The main goal is to provide a device that could be reused without loss of performance, thus decreasing procedural cost and avoiding thoracotomy at the same time.

Thus, in places where there is limited facilities and resources like Bangladesh, CMC is by far the less costly procedure. Considering the cost of hospitalization, personnel and disposable, CMC will probably continue to be the procedure of choice for most countries where rheumatic MS is endemic

Conclusion :

Closed mitral commissurotomy results in marked symptomatic and haemodynamic improvement in patients with mitral stenosis immediately. This improvement likely to be maintained for long time provided satisfactory dilatiation is achieved and restenosis does not occur.

References :

1. Okubo S, Masuda K, Kawazoe K et al. Rheumatic heart disease in Bangladesh and Japan. Difference of clinical features including 2-D echocardiographic finding. In proceedings of Bangladesh, Japan conference on cardiovascular diseases 1985.
2. Hatle L, Angèlsen B, Tromsdal A. Noninvasive assessment of atrioventricular pressure half time by Doppler ultrasound. Circulation 1979; GO: 1096- 1104.
3. John S. Bashi VV, Murlidharan S. Rajarajeshwari T, Sukumar P, Sunder Rao SS.. Closed mitral valvotomy : easily result and long term followup of 3724 consecutive patients circulation, 1983; 68 : 891-7.
4. Inoue K, Nakamura T, Kitamura F, Miyamoto N. clinical application of transvenous mitral commissurotomy by a new balloon catheter. J thoracic cardiovascular surgery 1984; 87: 394-402.
5. Palacios IF, Tuzen ME Weyman AK. et al. Clinical, follow-up of patients undergoing percutaneous mitral balloon valvotomy Circulation 1995; 91: 671-67 6.
6. Nair M, Arora R, Mohan JC, Kalra GS, Sethi KK. Nigam M, Khalilullah M. Assessment of mitral valve stenosis by echocardiography : utility of various methods before and after mitral valvotomy. Int J. Cardiol 1991; 32 : 389-94.
7. Aroar R, Nair M, Kalra GS, Nigam M, Khalilullah M. Immediate and long term results of balloon and surgical closed mitral valvotomy; A randomized comparative study. Am heart J 1993; 125: 1091-4.
8. Turi ZG , Reyes VP, Raju BS, Raju AR, Kumar. DN, et al. Percutaneours balloon versus surgical closed commissurotomy for mitral stenosis. A prospective randomized trial. Circulation 1991; 93: 1176-85. .
9. Manabe H ; Oyama C, Kitamura S. et al valvotomy in young patient with rheumatic mitral stenosis Ann thoracic Surgery 1977; 23; 245_
10. Cribier A, Rath PCB Letac B. Percutaneous mitral valvotomy with a metal dilator. The Lancet 1997; 349; 1667-1668.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

A Study on Association of Waist Circumference and Waist-hip Ratio with Acute Myocardial Infarction in Bangaldesh

MA Muqueet[1], KMHS Sirajul Haque[2], GM Faruque[3], M Hossain[4]
RJ Khan[5], S Ounpuu[6], Salim Yusuf [7]

Summary :

Objective : To investigate the link of waist circumference and waist-hip ratio in patients with Acute Myocardial Infarction in Bangladeshi population. Methodology: Data was collected from 3 centres in Bangladesh as a part of a large multinational study (The Inter-heart Study) for Waist circumference and Waist-hip ratio in patients with Acute Myocardial Infarction comparing with control. 170 cases of AMI and 150 cases of controls were studied. Measurement of WC and WHR were taken as per protocol of Inter-heart Study. Baseline characteristics of patients with Acute Myocardial Infarction and control group were also analysed. A mean value with standard deviation of WC and WHR have been analysed in these two groups and was compared by standard t-test and p value was determined. Results: The mean value of waist circumference in AMI group was 87±10.9 cm and in control group was 82±9.8 cm. The difference of waist circumference in these two groups was statistically significant (p value <0.01). Similarly, the mean value of waist-hip ratio was compared in these two groups of patients. Mean WHR ± SD in AMI group was 0.96±0.064 and in control group was 0.93±0.065 (p value <0.0001). Conclusion: There is a strong association of increased waist circumference and waist-hip ratio with Acute Myocardial Infarction in Bangladeshi population.This is consistent with other studies which has verified association of CHD & AMI with increased waist circumference & waist-hip ratio.

***Key words** : West Circumference, WHR, MI*

[Chest & Heart Journal 2003; 27 (1) : 14-17]

Introduction:

Coronary heart disease (CHD) accounts for 12 million deaths worldwide annually. Despite impressive strides on diagnosis and management over last three decades CHD continues to be a major public health problem in both developed and developing countries. Among many established and emerging risk factors obesity, waist circumference and waist-hip ratio showed some interesting relationship with CHD and Acute Myocardial Infarction (AMI)[1].

Obesity is associated with increased prevalence of hypertension, abnormal blood lipid profile, diabetes mellitus and coronary heart disease[2,3]. Determinant of obesity include genetic factors, socio-economic status and other behavioral factors. In most affluent societies, there is a inverse

1. Research Co-ordinator, Department of Cardiology, Bangabandhu Sheikh Mujib Medical University, Dhaka.
2. Prof. and Chairman, Department of Cardiology, Bangabandhu Sheikh Mujib Medical University, Dhaka.
3. Associate Prof. of Cardiology, NICVD, Dhaka
4. Associate Prof. of Cardiology NICVD, Dhaka.
5. Senior House Physician, Dept. of Cardiology, Bangabandhu Sheikh Mujib Medical University, Dhaka.
6. Co-Investigator, the Inter-heart study
7. Principal Investigator, The inter-heart Study

relationship between economic status and prevalence of overweight however in societies where food is scarce overweight may be seen as visible indication of wealth and status[4].

Abdominal obesity is a emerging risk factor and known to be a important marker of CHD,abnormal glucose-insulin metabolism, hypertension, Low HDL-c, increased TG and LDLc[5].

Waist circumference and waist-hip ratio have been increasingly identified as one the risk factors of CHD[6]. In South Asia, some studies have verified the link between Waist Circumference (WC) and Waist-Hip ratio to CHD and AMI however only few studies could be found in Bangladesh[7].

Body-mass index greater than 28 is associated with three to four times higher risk of having coronary heart disease (CHD); cerebro-vascular disease (CVD) and diabetes mellitus[8]. An increase in central distribution of body fat is defined as a ratio of waist-hip circumference of > 0.90 in women and > 1.0 in men[9].

Background:

Patients with Acute Myocardial Infarction were studied from CCU's of three hospitals in Dhaka city as a part of the Inter-heart Study in centres 361(BSMMU),362(DMCH) and 363(NICVD) from 13.09.1999 to 15.10.2002.

This is a large multi-centre hospital based case-control study (age and sex matched) of AMI involving 260 centres in 46 countries to observe strength of association between traditional and emerging risk factors of acute myocardial infarction in different ethnic and geographic region to see any variation of these risk factors at various parts of the world and also observe variation of the practice pattern of AMI[10].

Methods and Materials :

Total number AMI cases studied was 248. Total number of control was 250. Out of these, 170 cases of AMI and 150 controls have been studied at three centres to find an association between Waist Circumference (WC) and Waist-Hip (WHR) ratio and Acute Myocardial Infarction.

Baseline Clinical Characteristics of both AMI and control group was analysed. All data was collected from the Inter-heart Study.

A mean value with standard deviation of WC and WHR have been analysed in these two groups. Difference of WC and WHR in these two groups was compared by a standard *t-test* and a *p-value* was determined. All statistical analysis were done in MS-Excel software.

Cases

Definition of AMI :

Clinical symptoms plus ECG changes such as new pathologic Q waves or 1mm ST elevation in any two or more contiguous leads or a new LBBB or new persistent ST-T wave changes diagnostic of a non-Q wave MI. Criteria for subsequent confirmation include enzyme elevation (> 2 times normal) or evolution of ECG changes.

Exclusion criteria:

Potential cases who have cardiogenic shock, a significant chronic medical illness (e.g. liver,untreated hyper or hypothyroidism, renal disease or malignancy or who are pregnant) will be excluded as their condition may change lifestyle or alter the risk factors for AMI, failure to provide informed consent.

Controls

Inclusion criteria as first control per case: Attendant or relative of a patient from a non-cardiac ward, or an unrelated (not first degree relative) attendant of a cardiac patient who has no history of previous myocardial infarction or angina.

Inclusion criteria as 2nd control per case:

a) Preferred

Patients attending the hospital or out-patients clinics for the following reasons:

2.1 refraction and cataracts

2.2 Do not use this code

2.3 physical check up

2.4 routine pap smear

2.5 routine breast examination

2.6 elective minor surgery for conditions that are not obviously related to

CHD or its risk factors

2.7 elective orthopedic surgery

b) Acceptable:

Patients attending the hospital or out patients clinic for the following reasons:

3.1 out patient fractures

3.2 arthritic complaints

3.3 plastic surgery

3.4 haemorrhoids, hernias, hydroceles

3.5 routine colon cancer screening

3.6 endoscopy

3.7 minor dermatological disorders

Exclusion criteria:
For controls are identical to those described for cases, with the additional criterion that controls have no previous diagnosis of heart disease or history of exertional chest pain, failure to provide informed consent.

Waist circumference (WC):
Waist circumference is measured to the nearest 0.1 cm using a non-stretchable standard tape measure attached to a spring balance exerting a force of 750 gm. Measurement should be taken over the unclothed abdomen at the smallest diameter between the costal margin and the iliac crest. The tape measure must be kept horizontal. Subject should relax with arms held loosely at sides. Atleast 2 measurements should be taken.

Hip Circumference (HC):
Hip circumference is measured to the nearest 0.1 cm using a non-stretchable standard tape measure attached to a spring balance exerting a force of 750gm,Measurements over light clothing at the level of the greater trochantres (usually the widest diameter around the buttocks). The tape measure must be kept horizontal. Atleast 2 measurements should be taken.

Waist to hip ratio (WHR): This is the ratio between waist to hip circumference.

Blood samples: All blood samples will be analysed blindly at the core laboratory according to the procedures outlined as follows:

Total cholesterol, HDLcholesterol, ApoB, Lp(a), Serological markers of infection, HbA1c, homocysteine, Buffy coat, Fibrinogen, Serum Folate, Serum Albumin, Serum Creatinine, White Blood Cell Count. Blood results were not available for analysis in this particular study.

Results:
170 patients of AMI and 150 controls were included in this study to compare WC and WHR between these two groups. Mean WC±SD in AMI group was 87±10.9;mean WC± SD in control was 82±9.81.Difference of WC in two groups were compared, *p value* was <0.01 Mean WHR ± SD in AMI group was 0.96±0.064; mean WHR± SD in control was 0.93±0.065.Difference of WHR in two groups were compared, *p value* was <0.0001.

Table-I

Clinical Characteristics of patients with Acute Myocardial Infarction (AMI):

Baseline characteristics	AMI Cases (170)	Controls (150)
Previous MI	12%	0%
Angina	14%	0%
Diabetes	19%	6.25%
Hypertension	55%	16%
Smoking(current /former)	48%	61.8%

Discussion :
Although, data from other risk factors of CHD like serum lipid profile, homocystiene, folate and serological markers of infection were not availabale for analysis from the core laboratory in Canada, it has been clearly noted from this study that increased waist circumference and waist-hip ratio has a strong link with acute myocardial infarction. This is in keeping with other studies which has substantiated a link between WC, WHR and AMI[11,12]. In south asian population, Waist circumference and WHR have been suggested as a independent risk factor for CHD in several studies[12,13]. This study have further confirmed the previous findings of a link of waist circumference & WHR with acute myocardial infarction in Bangladeshi population.

References:

1. Larsson B, Svardsudd K, Welin L et al. Abdominal adipose tissue distribution obesity and risk factors of cardiovascular diseases and death: 13 year follow up of participants in the study of men born in 1913. Br. Med J : 1984; 288(6428) : 1401-1413.

2. Williams DP, et al. Body fatness and risk of elevated blood pressure, total Cholesterol and serum lipoprotien ratios in children and adolescents. Am J Pub Health:1992; 82 : 358-363.

3. Bhatnagar D,Anand IS,Durrington PN,Patel DJ,Wander GS, Mackness MI,Creed F et al: coronary risk factors in people from the Indian in West London and their siblings in India.Lancet 1995; 345 : 405-409.

4. Dhawan J, Bray CL, Warbarton R, Ghambhir DS, Morris J. Insulin resistance, high prevalence of diabetes and cardiovascular risk in immigrant Asians. Genetic or envirounmental effect? Br.Heart J 1994; 72 : 413-421.

5. WHO (1990) Diet,Nutrition and prevention of chronic diseases. Report of a WHO Study Group, WHO technical report series – 797,Geneva,1990.

6. WHO (1995) WHO technical report series – 854

7. Pais P, Pogue J, Gerstein H, Zachariah E, Savitha D, Jayprakash S, Nayak, S Yusuf : Risk factors for acute myocardial infarction in Indians : A case control study.Lancet 1996; 348 : 358-63.

8. Van Halie T. Health implications of overweight and obesity in the United States. Ann Intern Med 1985;103 : 938-8

9. Kisselbeh AH, Krakower GR. Regional adiposity and morbidity. Physiol Rev 1994; 74 : 761-811.

10. Stephanie Ounpuu, Abdissa Negassa, Salim Yusuf INTER-HEART: A global Study of risk factors of acute myocardial infarction : American Heart Journal 2001; 141 : 711-21

11. Larsson B, Svardsudd K, Welin L, Wilhelmsen, Bjorntorp P, Tibblin G. Abdominal adipose tissue distribution, obesity and risk of cardiovascular disease and death: 13 year follow up of participants in the study of men born in 1913. Br Med J 1984; 288(6428) : 1401-4.

12. Onat A, Sansoy V, Uysal O. Waist circumference and waist-to-hip ratio in Turkish adults : interrelation with other risk factors and association with cardiovascular disease : Int J Cardiol 1999; 70(1) : 43-50.

13. Mc keigue PM, Shah B, Marmot MG. Relation of central obesity and insulin resistance with high diabetes prevalence and cardiovascular risk in South Asians. Lancet 1991; 337 : 382-386.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

Atherosclerosis of Aorta & Coronary Arteries : An Autopsy Study of 300 Medicolegal Cases at Dhaka Medical College Hospital

Md. Shamsul Haque[1], KMHS Sirajul Haque[2], Tareq-Al-Nasir[3], AKM Shamsul Islam[4]

Summary :

We sought to provide incidence of atherosclerotic status of postmortem cases died of different medicolegal causes. This could be helpful in planning & implementation of health care delivery of related disorders & for future research. Incidence of atherosclerotic disorders are on the rise in the country. But there is scanty information on the related problem of the people. The postmortem studies have been regarded as one method of study. The 300 medicolegal autopsy of heart, aorta & coronary arteries were done in postmortem room of DMCH from November 1998 to June 1999. Collection of specimen were done by block dissection procedure & preserved in standard formalin solution. Routine & special staining were done for histopathological analysis. Twenty seven (9%) had various grades of atherosclerotic lesion in the aorta & coronary arteries. Out of 27 cases, 12 (44.4%) had different grades of coronary atherosclerosis. The peak period of the disease were six decade. the youngest one of coronary involvement was 40 years old. Two cases had clot within the atheroma. One in proximal LAD & the other in the ascending aorta with dissection, one had total occlusion of left main coronary artery. Two cases had concentric LVH with concomitant coronary atherosclerosis. The available data suggest an unbiased study of the atherosclerotic disorders with complication. This study result will inspire large scale investigative autopsy study to find out prevalence of atherosclerotic lesions of all large & medium sized arteries of the body.

Key words : *Atherosclerosis, autopsy study.*

[Chest & Heart Journal 2003; 27 (1) : 18-23]

Introduction :

Atherosclerosis is patchy focal disease of the tunica intima of the medium and large arteries. It is a complex inflammatory fibroproliferative response to retention of plasma derived altherogenic lipoprotein in the intima of medium and large arteries. The aorta, cerebral and epicardial coronary arteries are prime targets[1]. It is now recognized that atherosclerosis is the result of multiple and complex gene-environment interaction, leads to influx, retention and modification of altherogenic lipoprotein, smooth muscle cell, macrophages & other leucocytes, cytokines, connective tissue and extracellular matrix including collagen elastic fibres and proteoglycan and calcium deposit, and associated with medial changes[1].

The atherosclerosis is slowly progressive disease that generally begins in childhood and after a large benign course becomes clinically manifested in middle to late adulthood. The initial lesions are fatty streaks. Grossly, fatty streaks appears as an area of yellow discoloration due to variable amount of lipid deposited in the foam cells. Grossly fatty streaks appears as an area of yellow discoloration due to variable amount of lipid deposited in the foam cells, Microscopically, fatty streaks consists of lipid laden macrophages[2].

The focal nature of the disease is highlighted by the term plaque, used first by the pathologists who

1. Associate Professor of Cardiology, Mymensingh Medical College, Mymensingh
2. Professor & Chairman of the Department of Cardiology, Bangabandhu Sheikh Mujib Medical University, Dhaka
3. Professor & Head, Department of Pathology, Dhaka Medical College, Dhaka
4. Professor & Head of the Department of Forensic Medicine, Dhaka Medical College, Dhaka

observed elevated oval lessons up to 1.c.m in length dotted over limited surface of an aorta, opened longitudinally and is viewed "enface" in the autopsy room. In the medium sized arteries such as epicardial coronary arteries, the focal nature of the plaque in also expressed by only part of the circumference of the vessel wall being involved[2].

Postmortem study Abroad :

The study of atherosclerosis in living population is difficult in many ways, including its cost effectiveness. The postmortem studies have been regarded as one good way of dealing with the problem, in Bombay, India, Raghaven p. carried out an autopsy study on 4335 cases in 1941. He found 568 cases i.e 13.1 percent had cardiovascular lesions. The incidence of coronary artery disease in these 568 was 9.8 percent. The incidence of coronary artery disease among the total cases was therefore 1.3 percent. A review of the subject by Schroder in 1958, gave an incidence of coronary artery disease of 7.2 percent in Bombay (9 out of 125 autopsies) and 21 percent in Lucknow out of 100 autopsies[3]. Very recently Manojwahi GD and Co-workers 1998, carried out an autopsy study of east Delhi to asses the status of coronary and aortic Atherosclerosis in medicolegal autopsies coming from various social strata without any history of coronary artery disease of or other related disease. They found overall incidence of atherosclerosis was 91% while coronary involvement was seen in 60 percent cases. The involvement was 61.3% in males and 54.2% in females. The youngest individual with coronary involvement was 18 years old. Peak period of severe grades of atherosclerotic lesion was observed in 6th decades in different international studies[4].

Postmortem study : in Bangladesh.

Islam 1996 and Shahnaz 1998 made postmortem study of atherosclerosis in the thoracic and abdominal aorta respectively on 50 cases each. But these small number of autopsies are not representative to explain prevalence of atherosclerosis[5,6].

Most of the medicolegal cases are brought to Dhaka Medical College morgue from different parts of Dhaka City. But a considerable numbers are also coming from different cities of the country as modern facilities for postmortem are not available in most of the Medical Colleges. Moreover, majority of people living in Dhaka come from others parts of the Country. So this study may reflect atherosclerotic status of the people of Bangladesh

Materials and Methods :

Three hundred consecutive medicolegal cases have been taken for study with the informed consent from the attendants. Study was carried out in the postmortem room of Forensic Medicine, department of Pathology and Cardiology for the duration for eight months starting from November 1998.

Inclusion Criteria

- Recent cadaver without rigor mortis and decomposition.
- Inquest report and chalan to be handed over to autopsy surgeon.

Exclusion Criteria

- Decomposed body.
- Collection of samples in holidays.

Collection of Specimens :

1. Aorta, heart with coronary arteries of 300 cases was removed by block dissection procedure with the help of autopsy surgeon.
2. The specimens was collected from the dead bodies within shortest possible time since death to avoid choosing decomposed specimens.
3. The specimens was kept in normal saline for a while & blood clots within the specimen & the fat & fascia was removed.

Dissection of Aorta

The scissors was passed along posterior surface of the iliac vessels & the whole length of the aorta up to aortic valve. Any plaque formation or the lesions was noted & preserved with 10% formalin.

Dissection of coronary arteries

The coronary arteries was examined by making serial cross section along the entire course of the major vessels about 2 to 3 mm apart using a sharp scalpel. This method demonstrated narrowing of the vessels & any antemortem thormbus in its lumen. The specimen was preserved in 10% formalin.

Dissection of Heart

The heart was examined externally for adhesions, pericarditis, discolouration of an underlying infarct & for aneurysm. The pericardium was examined & incised with the tip of the scissors & heart was exposed. The isolated heart was opened in the direction of flow of blood, i.e. from inflow tract to outflow tract with the enterotome. All chambers and valves were observed. Horizontal section of cavity was given of measurements of wall thickness.

Histopathological Methods

1. Routine: i) HE (Haematoxylin & Eosin) ii) Sudan 4 stain
2. Special: i) EVG staining for elastic fibre ii) Mallory Azam (MAZ/stain)
3. Immuno-staining by LSAB.

Grading of the atherosclerotic Lesions
(Gore and Tajeda 1957)

Grade	Type of atherosclerotic Lesions
I	Lipid streaks, spots, patches,
II	Fibrous and atheromatous plaques.
III	Necrotic, ulcerated, haemorragic or thrombotic plaques.
VI	Calcified plaque's.

Results :

Table-I shows age & sex distribution according to decades. Out of 300 cadavers 250 were male and 50 were female. A total of 148 cases (49.3%) belong to third & 4th decades.

Table-II shows 27 or 9% cases had some grades of atherosclerotic lesions in the aorta & coronary arteries. Out of 27 cases nine belonged to 6th decades. The disease appeared earliest at fatty streak at the age of 20 in the third & 4th decades Fatty streak appeared in 10 or 37%. 12 cadavers or 44.4% has grade II & above lesions from 4th to 7th decades. All of this had concomitant aortic & coronary atherosclerosis. Highest incidence of grade-II (atheromatous plaque, 1 case) & grade-III (ulcerated, hemorrhagic & thrombotic plaque, 6 cases) were observed in 6 decades. Prior to age of 50 no complicated or calcified lesion was absent. One case had calcified lesion in the aorta & coronary arteries at the age of 65.

Fig.-1 : Autopsy data so far available from India are very old & sketchy. In Bombay in 1941 Raghavan found, out of 4335 autopsies, 568 cases or 13.1% with cardiovascular lesions. The incidence of coronary artery disease in these 568 was 9.8%. When total patient was considered, it was 1.3%. In our study in 1999, we found, out of 300 cases, 27 or 9% had atherosclerotic lesions. The incidence of coronary artery disease was 12 or 4%. We observed 3 cases had left ventricular hypertrophy (LVH). All of these had concomitant aortic & coronary atherosclerosis. One cadaver had total occlusion of left main coronary artery (see photograph).

Table-I

Distribution of 300 cases by age and sex.

Age group	No. of cases	Male	Female
0-10	9	8	1
11-20	68	55	13
*21-30	70	58	12
*31-40	78	70	8
41-50	36	28	8
51-60	32	25	7
61-70	6	5	1
71-80	1	1	0
	300	250	50

148 (49.3%) of cadavers belonged to third and fourth decades.

Table-II

Aorta and coronary atherosclerosis according to grades of lesions to each decades

Age groups	No. of Cases	Grade			
		1	II	III	VI
0-10	0	0	0	0	0
11-20	1	1	0	0	0
21-30	5	5#	0	0	0
31-40	6	5#	1*	0	0
41-50	3	2	1 *	0	0
51-60	9	2	1*	6*	0
61-70	3	0 *	1*	1*	1*
	27	15	4	7	1

* A total No of 12 cadavers has grade II and above lesions. All of these had concomitant aortic & coronary atherosclerosis.

Two cases were female in third & 4th decade who had grade-I lesions.

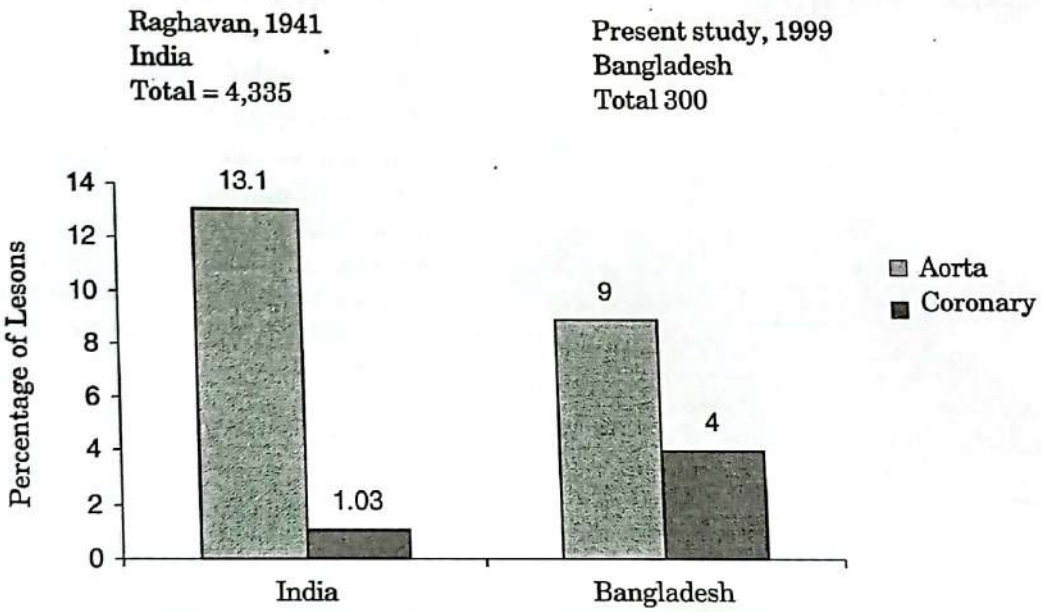


Fig.-1 : *Comparison of autopsy studies with International studies*

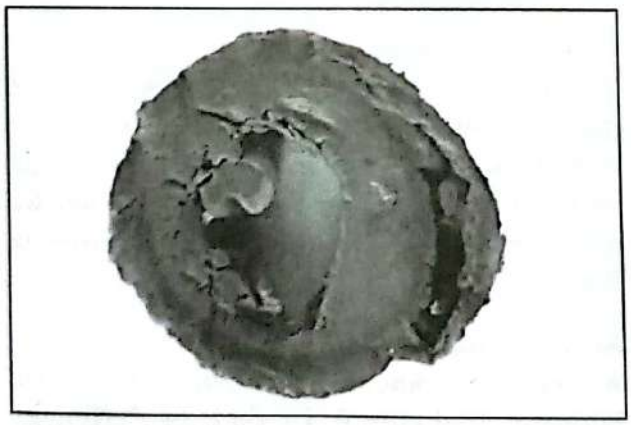


Fig.-1 : *Morbid anatomy of left ventricular concentric hypertrophy*

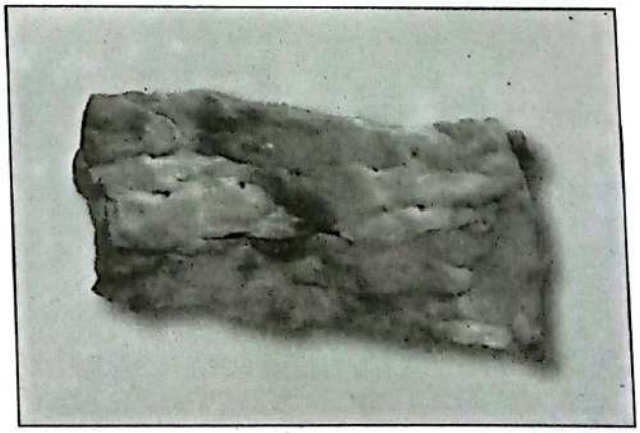


Fig.-2 : *Grade III atherosclerosis of aorta*

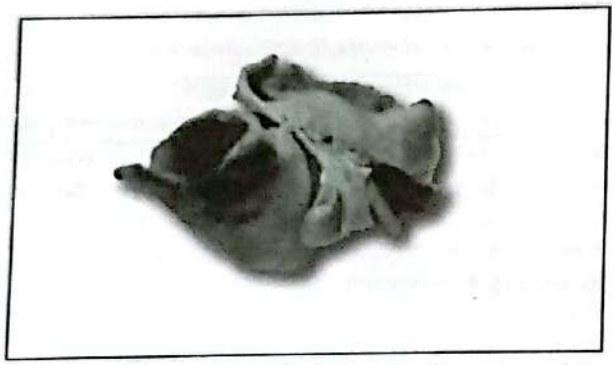


Fig.-3 : *Dissection of abdominal aorta with atherosclerosis*

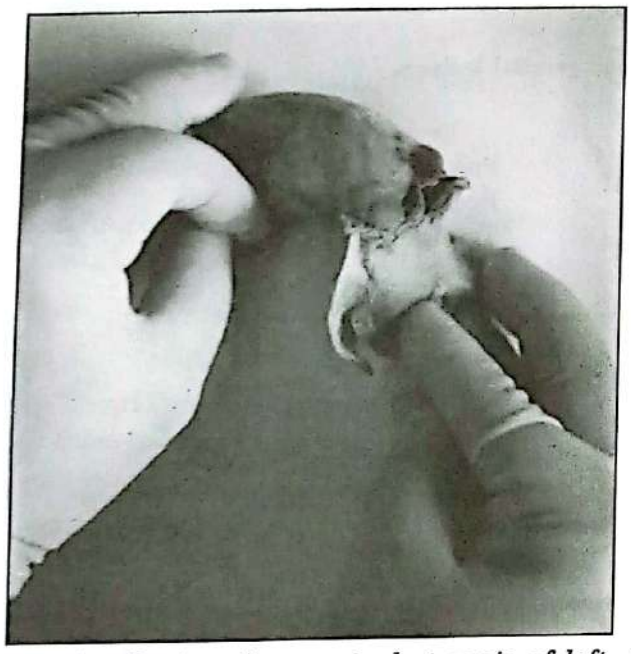


Fig.-4 : *Section shows osteal stenosis of left coronary artery*

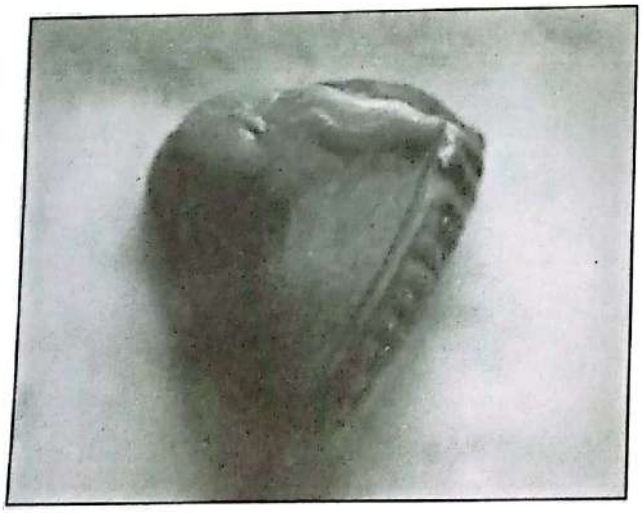


Fig.-5 : *Morbid anatomy of anterior wall myocardial infarction*

Discussion :

This is perhaps, available largest autopsy study ever done in Bangladesh. The autopsy of aorta & coronary artery of 300 medicolegal cases without any known atherosclerotic lesion provided us an unbiased information regard the atherosclerotic status including different grades of lesions in different age & sex groups. 1

Approximately 50% of cadavers belonged to third & 4th decades (Table-I). Low incidence of atherosclerotic lesions (9%) could be explained by the presence & of higher number of young cadavers (Table-I).

The result obtained from this study indicate that atherosclerosis in the aorta & coronary arteries progresses with advancing age. Peak period of grade -II & above atherosclerotic lesion was 6th decades. (Table-II).

We observed this disease appeared as fatty streaks' earliest at the age of 20, in contrast to Indian study, the disease appeared earliest at the age of 4 in the form of lipid spots.2. We found 3 cases had LVH having concomitant aortic & coronary atherosclerosis. (See photograph). From this observation, it may be mentioned that LVH could be a risk factor for atherosclerosis. Another observation from this study was that the cadavers having grade-II & above atherosclerotic lesion had concomitant aortic & coronary atherosclerosis. No grade 1 aortic lesion associated with coronary involvement (Table-II). When compared to study done by Raghavan in 1941, we observed incidence of coronary artery disease in Bangladesh are on the rise (Figure-1).

Clinical Implications :

This fundamental study revealed prevalence of atherosclerotic disease in persons probably not complaining of ischemic heart disease, which might be helpful for planing & implementation for prevention & control of this dreadly disease in Bangladesh.

Acknowledgement:

We gratefully acknowledge Dr. Sher-Ali Mollah of Forensic Medicine & Dr Sadi of Pathology Department for their active participation & continued support. We also like to remember

Ramesh, Selim & others working in postmortem room for their active and sincere performances.

References:

1. Pang H. Clong, Bonnie S. Bachenheimor. current, new & future treatment in dyslipedemia & atherosclerosis. Drugs 2000; 60(1): p-58-59.
2. Ross R. The lesions of atherosclerosis. In: Braunwald E. editor. A text book of cardiovascular medicine. WB. Sunders company 1997 : IIII-4.
3. Padmabati, Epidemiology of cardiovascular diseases in India. II. Ischemic heart diseases, circulation 1962; 15 :712
4. Monojwal GD. Verema Sk, Agarwal BBZ. Aortic & coronary atherosclerosis in east Delhi - an autopsy study. Third international symposium on atherosclerosis, thrombosis & transfusion medicine. Abstract book. October, 1998; P-28.
5. Islam MS. Postmortem study of atherosclerosis in the aorta & coronary arteries in Bangladeshi males (thesis). Dhaka University of Dhaka, 1996.
6. Begum S. Postmortem study of atherosclerosis in the abdominal aorta in Bangladeshi males (thesis) Dhaka University of Dhaka, 1998.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

Ebstein's Anomaly with WPW syndrome - A Combination of Congenital Structural and Electrical Abnormality

Syed Azizul Haque, M Ayub Ali, AW Chowdhury, N.Karim Khan

Summary :

Mr. JU 35 yrs. a nonsmoker, nondiabetic, nonhypertensive, presented with history of recurrent episodes of palpitation without loss of conciousness except once. This used to appear spontaneously and persisted hours to days, in most of the situations the episodes were relieved by taking some measures either medications or D.C. shock. He was evaluated by 12 lead electrocardiogram (ECG), echocardiogram, hotter monitoring and cardiac catheterization and was lebelled as a case of Ebstein's anomaly of tricuspid valve with WPW syndrome. He was treated with verapamil, amiodarone, disopyroramide and propranolol in different times as maintenance therapy. No treatment gave him complete remission from arrhythmic episodes. He was, advised for electrophysiological (EP) study as well as surgical correction of tricuspid valve.

Key words : *Ebstein's anomaly, WPW syndrome, combination*

[Chest & Heart Journal 2003; 27 (1) : 24-26]

Introduction :

Recurrent episodes of supraventricular tachycardia in a patient is not an uncommon presentation. It occurs mostly in a normal individual with a structurally normal heart[1]. But sometimes it may reflect the tip of the ice-berg i.e. it may herald underlying serious structural heart disease or electrical abnormality or may be combination of the two. This case report is aimed to give the message that though SVT usually occurs in structurally normal heart, we must look for any underlying cardiac disease. So that, by correcting this we can avoid the embarrassing clinical situation and may prolong the patients life.

Case Report :

A 35-year old gentleman from Feni, Bangladesh, presented with history of recurrent episodes of palpitation with occasional dizziness and one episode of syncope. He first noticed this 17 years back. Since then he had history of hospitalisation for nine times for his agonising palpitation. The episodes used to appear spontaneously and persisted for few minutes to days (maximum duration was 3 days). Initially the episodes subsided spontaneously but later on these were terminated by medications or D.C. cardioversion following hospitalisation. The episodes of palpitation were associated with polyurea, occasional dizziness and syncope for once from which he had spontaneous recovery and this was not associated with convulsion, headache or weakness of any part of body. He had no complaint regarding chest pain or shortness of breath during the attacks. He had also no history of cyanosis.

Patient's past history other than this was not remarkable. Both of his parents are alive and keeping good health. There was no history of any significant drug intake (especially lithium carbonate) by his mother during pregnancy period. She has the history of uncomplicated home delivery of all her children. No other children of his parents suffering from any congenital ailments. But his parents have the history of consanguineous marriage (marriage between first cousins).

His general examination revealed average body build and nutrition. Cyanosis, clubbing oedema were absent. He was not dyspnic. During sinus rhythm, on an average his pulse was 76/min (regular) and BP 120/70 mm of Hg. Precordium was silent on palpation and apex was not shifted.

Both first and second heart sound were splitted. No third or fourth sounds were present. A pansystoic murmur of grade 3/6 heard over left lower parasternal area which accentuates on inspiration.

Department of Cardiology, National Institute of Cardiolvascular Disease, Dhaka

ECG showed WPW pattern normally and wide complex tachycardia during attack. X-ray chest P/A view showed cardiomegally with right ventricular dominance, lung fields were normal. Echocardiography (2D & Doppler) showed hugely enlarged fight atrium and small right ventricle with apical displacement of tricvupid valve. Mitral to tricuspid valve distance were 21mm. Doppler study showed tricuspid flow but no atrial septal defect or pulmonary stenosis. Cardiac catheterization was attempted but abandoned due to recurrent episodes of ventricular arrhythmia during the procedure.

He was treated with verapamil, propranolol, digoxin and amiodarone as maintainence medication in different times. Among them amiodarone was the drug which gave him long term relief from attack and digoxin was the least beneficial. He was discharged and advised for EP Study and surgical correction of structural defect for permanent relief from the agonising symptoms.

The patient then went to a specialized Cardiac centre and underwent EP study as well as surgical ablation of the by pass tract. At present the patient is haemodynamically stable and is undergoing periodical follow up by both the cardiology and surgical unit. His structural abnormality is planned to be corrected in future.

Discussion :

Congenital heart disease is the commonest single group of congenital abnormalities of human beings accounting for about 30% of the total[2]. On the otherhand the incidence of congenital heart disease is 8 per 1000 live birth, among them 2.6 per 1000 have critical disease, which is defined as a malformation severe enough to result in cardiac catheterization, cardiac surgery or death within the first year of life[3]. In Bangladesh one study conducted in Azimpur maternity and child care and training institute showed 6.7 per 1000 cardiovascular malformations are present. VSD (ventricular septal defect) is the commonest cardiac malformation, accounting for about 25% of congenital heart disease[4].

Congenital heart disease may be structural tike ASD, VSD, PDA, TOF etc. or electrical like WPW, LGL syndrome or combination of the two. Again it may be cyanotic like. TOF, TGA, TAPVD or acyanotic tike ASD, VSD or may be potentially cyanotic which begins as acyanotic but later becomes cyanotic. Our case under study is a combination of structural and electrical abnormality i.e. Ebsteins anomaly of tricuspid valve with WPW syndrome.

In 1866 Wilhelon Ebstein Assistant physician and prosector first wrote an account of the clinical and necropsy information of a 19 years old labour who was admitted to the All Saints hospital in Breslan, Poland and died ten days later, his title was "on a very rare case of insufficiency of the tricuspid valve caused by a severe congenital malformation of the Same". In fact Tourniaire, Deyrieuy and Tartalier had diagnosed the anomaly in a living subject in 1949, exactly 83 years after Ebsteins original description[5].

Ebstein's anomaly occurs approximately 1 in 20,000 live births and has a prevalence of 0.5 percent or less among patients with congenital heart diseases. Here tricuspid leaflets donot attach normally to the annulus, so that the valve orifice as well as leaflets are displaced downward into right ventricle. The right side of the heart therefore consists of three morphologic components - the right atrium proper, the functional right ventricule and an interventing zone that is anatomically ventricular but functionally right atrial Atrialized right ventricle)[5]. Valve leaflets are usually deformed. Septal leaflet is usually small and is attached to the wall of the septum, anterior leafled may escape deformity but usually it is large - sail like. The posterior cusp is often the most deformed. In our case the tricuspid valve is apically displaced (MV - TV distance 21 mm) but the valves are minimally deformed[6]. Rarely Ebstein's anomaly may affect left heart valve which is usually associated with congenitally corrected transposition of great arteries.

About 50% patients of Ebstein's anomaly have additional cardiac abnormalities the most common being an atrial septal defect, pulmonary stenosis or atresia, Fallot's tetrad, mitral stenosis and corrected transposition of the great arteries. Bypass tracts usually type B Wolf-Parkinson-White (WPM pre-excitation present in only 5-25% of patients with Ebstein anomaly. Sometimes multiple bypass tracts are present. Ebsteins anomaly is the only congenital cardiac malformation consistently

associated with WPW syndrome. The combination of palpitation (paraxysmal rapid heart action) with type B WPW preexcitation and cyanosis constitutes strong evidence of Ebstein's anomaly and occurs in 50-80% of patients. But our patient had no cyanosis either persistent or intermittent which can give an easy clinical diagnosis. On the other hand this was a strong favourable prognostic factor for him, so that he reached at the age of 33 yrs with apparently normal body built.

He experienced the first episode of agonising palpitation at the age of 17 which reached him at the diagnosis. This coincides with clue that if the mean age at time of diagnosis is the midteens, indicating that patients generally escape detection in infancy and early childhood5. From the age of 17 he had been hospitalised 9 times for episodic and distressing palpitation. In most of the times he was haemodynamically stable except once when he presented with syncope. This time it was reverted to sinus rhythm by DC shock. In other time medical treatment alone relieved him. Different drugs were used as maintenance therapy but no drug could give him permanent relieve. Among the different drugs used digoxin was the worst effective and amiodarone was the best to relieve him for longer duration. This is the drug which can act both on atria, ventricule as well as on bypass tract. As the patient is not totally free of symptoms & he has definite structural and electrical abnormality, he is advised to go for EP study and surgical correction of the abnormality.

This case report illustrates that though recurrent episodes of SVT usually occurs in a normal person with a normal heart, we must look for any underlying structural or electrical abnormalities, treatment of which can only give permanent relieve of symptoms and may even prolong life.

References:

1. Myerburg RJ, Kloosterman EM, Castellanus A. Recognition, Clinical assessment and management of arrhythmias and conduction disturbance. In : Fuster V, Alexander RW, O'Rourke RA (Eds). Hurst's the heart, 10th Edition 2001, New York, McGraw-Hill Company, 797-874.
2. Khandaker NR, Jalal Uddin M, Majumder AS, Banu FA, Banadee S. Haemodynamic pattern of ventricular septa) defect. Bangladesh Heart Journal 1996; 11 (2) : 65-70.
3. Freed MD. The Pathology, Pathophysiology, Recognition and treatment of congenital heart disease. In : Fuster V, Alexander RW, O'rourke RA (Eds.). Hurst's the heart 10th Edition, 2001; New York. McGraw - Hill Company, P. 1837-1906.
4. Begum NNF, Ahmed QS. Pattern of Heart disease among Neonates and their outcome one-year experience in non-invasive cardiac laboratory of combined military hospital, Dhaka. Bangladesh J Child Heart 2001; 25 (3/4) : 48-52.
5. Pertoff JK. Ebstein's anomaly of the tricuspid valve. In : Pertoff JK (eds.). The clinical recognition of congenital heart disease. 3'd edition, New Delhi Jaypee Brothers 1998; P. 235-251.
6. Oram S. Ebstein's anomaly In: Oram S. (ed.): Clinical Heart Disease. 2"d edition. London William Hememamu Medical Books Ltd. 1982; p. 35-57.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

Left Atrial Size in Hypertrophic Cardiomyopathy-the Impact of Mitral Regurgitation and Left Ventricular out flow Tract Gradient

Baren Chakraborty[1], Md Liaquat Ali[2], (Major) Shaila Perveen[3]
Masum Kamal Khan[4], AHM Kabir[5]

Summary :

Left atrial size of 142 consecutively enrolled patients with hypertrophic cardiomyopathy (HCM) were evaluated. Out of 142 patients 38 patients (26.7%) had Left atrial (LA) size less than 40 mm, 53 patients (37.3%) were documented to have mild to moderate LA enlargement in the range 40-45 mm and 51 patients (35. 9%) had LA size >45 mm. Out of 51 patients with LA size >45 mm 8 patients (15. 6%) had moderate to severe MR and 13 patients (25. 5%) had Doppler evidence of significant LVOT obstruction. Maximum LV thickness was greater in patients with marked LA enlargement 23+/-6 mm versus 19+/-5 mm in the group with normal or mild LA enlargement. Only 15. 5% patients with HCM with marked LA enlargement had moderate to severe MR and 25. 5% had Doppler evidence LVOT obstruction.

No significant association was evident between severity of mitral regurgitation and left ventricular outflow tract obstruction with Left atrial (LA) size.

[Chest & Heart Journal 2003; 27 (1) : 27-30]

Introduction :

HCM is probably the most common genetically transmitted cardiovascular disease and is transmitted in autosomal dominant fashion[1,2]. Researchers have found multiple mutations in 10 different sarcomeric protiens such as myosin heavy chain and tropomysin that can cause the disorder. Some mutations confer an especially high risk of heart failure or arrhythmia[1]. The prevalence of HCM in the general population is about 0. 2%[3]. HCM is the most common monogenic cardiac disorder and the most common cause of sudden cardiac death in children and adolescents[1-4]. HCM is characterized by left ventricular hypertrophy that is usually asymmetric and can affact various regions of the ventricle.

The clinical impact of LA size in HCM is largely unresolved. Studies regarding long term prognosis of LA enlargement in HCM patients have been sparse and often conflicting[5]. It has been suggested that size of LA depends on the severity of mitral regurgitation and partly on the severity of Left ventricular out flow tract obstruction[5,6]. In this study we sought to identify the determinants of LA size in HCM.

Materials and method :

In this prospective study 142 consecutively enrolled patients with HCM were evaluated. Diagnosis of HCM was based on echocardiographic identification of hypertrophied, nondilated left ventricle in the absence of another cardiac or systemic disease capable of producing the magnitude of hypertrophy evident. For proper diagnosis of HCM, other conditions resulting in hypertrophic alterations such as hypertensive heart disease, valvular or supravalvular aortic stenosis were ruled out. Echocardiographic studies

1. Associate Professor of Cardiology, Bangladesh Medical College, Dhaka
2. Assistant Professor of Cardiology, Bangladesh Medical College, Dhaka
3. Classified Specialist in Medicine, CMH, Dhaka
4. Registrar, Medicine Department, Bangladesh Medical College, Dhaka
5. Registrar Medicine Department, Bangladesh Medical College, Dhaka

were performed with GE Vingmed system Five and Hewlett Packard instruments. The extent and location of hypertrophy was assessed by two dimensional echocardiography. Left ventricular dimensions at end-diastole and end-systole, as well as LV wall thickness were obtained from two-dimensional images according to the standards of the American Society of Echocardiography. In each patient, the diagnosis of HCM was based on the two-dimensional echocardiographic identification of hypertrophied LV (wall thickness >15 mm in adults)[7]. Left atrial (LA) size was assessed by M-mode echocardiography in a standard fashion. The LA size was measured at end-systole as the largest distance between the posterior aortic wall and the center of the line denoting the posterior left atrial wall. LA size was considered enlarged if the left atrial diameter was >40 mm[8]. Peak instantaneous LV outflow tract basal gradient was estimated with continuous-wave Doppler. Doppler recordings of blood velocity at the apical,midventricular and left ventricular outflow tract (LVOT) level were performed. LVOT obstruction under basal conditions was considered present when a peak outflow gradient of 30 mm of Hg or more was identified by continuous-wave Doppler[9,10]. Severity of mitral regurgitation (MR) was estimated with colour flow imaging.In colour flow imaging of mitral regurgitation, the area of regurgitant jet relative to the left atrial size is most predictive of regurgitant severity[11].Left atrial area and regurgitant jet area were measured by planimetry. The severity of MR was assessed from the ratio of regurgitant jet area and left atrial area. MR was graded as mild if the ratio is <20%, moderate if the ratio ranges from 20-40% and severe if the ratio > 40%[12].

Results :

The mean age at diagnosis was 42+/-22 (range 18 to 82 years). 82 patients (58%) were male and 60 patients (42%) were female.In this series the most frequent morphologic variety of HCM consists of asymmetrical septal hypertrophy. 116 patients (81.7%) were detected to have this morphologic type of HCM. Isolated hypertrophy of basal septum was noted in 14 patients (9.8%), 9 patients (6.3%) had apical cardiomyopathy and 3 patients (2.1%) had concentric variety of HCM (Table-I).

Table-I

Types of HCM (n-142)

Types	Number	Percentage
Asymmetrial Septal Hypertrophy	116	81.7%
Isolated basal septum	14	9.8%
Apical	9	6.3%
Concentric	3	2.1%

Overall LA size in this series ranged from 33 to 67 mm (mean 41+/-8 mm). 38 patients (26.7%) had LA size less than 40 mm, 53 patients (37.3%) were documented to have mild to moderate LA enlargement in the range 40-45 mm and 51 patients (35.9%) had LA size >45 mm.

Out of 51 patients with LA size >45 mm 16 patients (31.3%) had trivial MR, 27 patients (52.9%) was documented to have mild MR, moderate MR was present in 5 patients (9.8%) and 3 patients (5.9%) had colour Doppler evidence of severe MR (Table –II). In this group of 51 patients who had echocardiographic evidence of marked LA enlargement, significant LVOT obstruction was documented in 13 subjects (25.5%) and remaining 38 (74.5%) subjects did not show Doppler evidence of LVOT obstruction (Table-III).

Table-II

Pattern of MR in patients with marked LA enlargement (n-51)

Grading	Number	Percentage
Trivial	16	31.3%
Mild	27	52.9%
Moderate	5	9.8%
Severe	3	5.9%

Table-III

LVOT obstruction (n-51)

LVOT gradient	Number	Percentage
Doppler evidence of LVOT Obstruction	13	25.5%
No Doppler evidence of LVOT Obstruction	38	75.5%

Total 8 patients (15. 6%) had moderate to severe MR. and 13 patients (25. 5%) had Doppler evidence of significant LVOT obstruction. Maximum LV thickness was greater in patients with marked LA enlargement 23+/-6 mm versus 19+/-5 mm in the group with normal or mild LA enlargement.

Discussion :

The determinants of LA enlargement in HCM remains largely unresolved. It has been suggested that LA dimension in HCM depends on the severity of mitral regurgitation and partly on the severity of Left ventricular out flow tract obstruction. But neither mitral regurgitation or presence of outflow tract obstruction reliably predicted the development of dilated LA[13,14]. In one series moderate to severe MR was present only in minority of patients with marked LA enlargement (15%) and outflow tract obstruction occurred with similar frequency[6]. In our present series only 15.5% patients with HCM with marked LA enlargement had moderate to severe MR and 25.5% had Doppler evidence of LVOT obstruction. These two determinants failed to explain the development of marked LA enlargement among the subjects of our study population. Modest LA enlargement upto 45 mm is common in HCM, probably the consequence of impaired diastolic function associated with thickened and non compliant ventricular chamber[6,15-17].

LA size may be an independent predictor of cardiovascular events in patients with HCM irrespective of presence or absence of atrial fibrillation. In one recently published series LA dimension was 42+/-9 in patients without history of vascular events and LA dimension was 49+/-8 in patients with history of vascular events (13). In the same series 51 patients with vascular events, left atrial size ranged from 38 to 72 mm and was normal (<40 mm) in only 4 patients (8%). Left atrial dimension was significantly greater in patients with events than in those without[13].

In our study we could not establish significant relationship between severity of MR and LVOT obstruction with markedly enlarged LA but we noticed a significant relation between maximum LV thickness and LA size. Maximum LV thickness was greater in patients with marked LA enlargement 23+/-6 mm versus 19+/-5 mm in the group with normal or mild LA enlargement.

It is possible that specific HCM-causing mutations may increase predisposition to LA enlargement by causing an intrinsic atrial myopathy associated with prolonged and fragmented atrial conduction and enlargement of LA[6,18-20].

Conclusion :

The authors conclude that neither severity of MR nor the presence of LVOT obstruction are important determinants of LA enlargement in patients with HCM. Maximum LV thickness or some other factors may be contributory.

References :

1. Braunwald E. Hypertrophic Cardiomyopathy : The benefit of a multidisciplinary approach. N Engl J Med 2002; 347 : 1306-7.
2. Franz WM, Muller OJ, Hugo AK. Cardiomyopathies : from genetics to the prospect of treatment. Lancet 2001; 358 : 1627-37.
3. 3. Maron BJ, Casey SA, Poliac LC et al. Clinical course of hypertrophic cardiomyopathy in a regional united States cohort. JAMA 1999; 281 : 650-5.
4. Watkins H. Sudden death in hypertrophic Cardiomyopathy. N Engl J Med 2000; 342 : 422-3.
5. 5. Corrado D, Basso C, Schiavon M et al. Screening foe hypertrophic cardiomyopathy. N Engl J Med 1998; 339 : 364-9.
6. 6. Olivotto I, Cecchi F, Casey SA et al. Impact of atrial fibrillation on the clinical course of hypertrophic Cardiomyopathy. Circulation 2001; 104 : 2517-24.
7. Maron BJ. Hypertrophic Cardiomyopathy. Lancet 1997; 350 : 127-33.
8. 8. Eriksson MJ, Sonnenberg B, Woo A et al. Long-term outcome in patients with apical hypertrophic cardiomyopathy. J Am Coll Cardiol 2002; 39 : 638-45.
9. 9. Spirito P, Bellone P, Harris KM et al. Magnitude of left ventricular hypertrophy and risk of sudden daeth in hypertrophic cardiomyopathy.N Engl J Med 2000; 342 : 1778-85.

10. 10. Panza JA, Petrone RK, Fananapazir L et al. Utility of continuous wave Doppler echocardiography in the non invasive assessment of left ventricular outflow tract pressure gradient in patients with hypertrophic cardiomyopathy. J Am Coll Cardiol 1992; 19 : 01-9.

11. Helmcke F. Color Doppler assessment of mitral regurgitation with orthogonal planes. Circulation 1987; 75 : 175-83.

12. Mazur W, Nagueh SF. Echocardiographic evaluation of mitral regurgitation. Curr Opin Cardiol 2001; 16 : 246-50.

13. Maron BJ, Olivotto I, Bellone P et al. Clinical profile of stroke in 900 patients with hypertrophic cardiomyopathy. J Am Coll Cardiol 2002; 39 : 301-7.

14. Yu EHC, Omran AS, Wigle D et al. Mitral regurgitation in hypertrophic obstructive cardiomyopathy : relationship to obstruction and relief with myectomy. J Am Coll Cardiol 2000; 36 : 2219- 25.

15. Watkins H. Sudden death in hypertrophic cardiomyopathy. N Engl J Med 2000; 342 : 422-3.

16. Maron BJ. Clinical course of hypertrophic cardiomyopathy in a regional United States cohort. JAMA 1999; 281 : 650-5.

17. Corrado D, Basso C, Schiavon M et al. Screening for hypertrophic cardiomyopathy in young athletes 1998; 339 : 364-9.

18. Shamim W, Yousufuddin M, Wang D et al. Nonsurgical reduction of the interventricular septum in patients with hypertrophic cardiomyopathy. N Engl J Med 2002; 337 : 1326-33.

19. Gruver EJ, Fatkin D, Dodds GA et al. Familial hypertrophic cardiomyopathy and atrial fibrillation caused by beta-cardiac myosin heavy chain mutation. Am J Cardiol 1999; 83 : 13-8.

20. Maron BJ, Olivotto I, Spirito P et al. Epidemiology of hypertrophic cardiomyopathy-related death. Circulation 2000; 102 : 858-64.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

Atrial Septal Defect : Analysis of 393 Cases

Major Nurun Nahar Fatema Begum[1], AKM Razzaque[2], Colonel Azhar Uddin Ahmed[3]

Summary :

Background: Atrial Septal Defect (ASD) is one of the commonest congenital cardiac anomaly. In Bangladesh, large number of cases are diagnosed each year but there is no study yet to see the natural history or outcome of the disease. This study was intended to see the outcome of the ASD secundum cases over a period of 3 years in a cardiac centre of Bangladesh.

Method: It is a retrospective study carried out in non invasive cardiac laboratory (NIC lab) of combined Military Hospital (CMH) Dhaka over a period of 3 years (Jan 1999 – Dec 2001). 393 cases of ASD secundum were included in the study and outcome of these cases were analysed with special emphasis to those who had spontaneous closure of ASD.

Results: Out of 393 cases 80 (20.26%) patient had spontaneous closure, 27 (6.87%) had surgical closure, 5 (1.27%) had device closure with amplatzer device, 181 (46.05%) patients are still under follow up and 96 (24.43%) patients were lost from follow up after first entry. Four (1.02%) patient died during this period. One from Eisenmenger syndrome and other 3 from causes not related to ASD directly.

***Key words :** ASD, Analysis.*

[Chest & Heart Journal 2003; 27 (1) : 31-35]

Introduction :

Any opening in the atrial septum, other than a competent foramen ovale is described as an atrial septal defect (ASD). ASD frequently occur in isolation. Secundum ASDs includes those with an incompletely formed or fenestrated septum primum covering the fossa ovalis[1]. The age at which the atrial septal defect is first discovered has been steadily decreasing with increasing awareness about the disease among pediatricians. A study in children's hospital in Boston showed 3 years as average age of detection of ASD[2]. The lack of symptoms and the lack of a readily audible murmur may account to the delay in discovering patients. Most of the patients are diagnosed incidentally when they are examined for other reason. Some has history of recurrent chest infection; some has history of poor weight gain. A few small infant and many older adults present with congestive heart failure. The natural course of ASD, except for the largest opening and those associated with other cardiac defects, is relatively benign[3]. Spontaneous closure has been reported in 14 to 66% of infants[4]. To the knowledge of the authors the present study is the first of its kind in Bangladesh. This study was designed to find out the type of ASD secundum depending on the size, age distribution, frequency of spontaneous closure, other outcomes and factors related to the spontaneous closure of ASD secundum.

Materials and Methods :

This retrospective study was carried out in the noninvasive cardiac laboratory (NIC Lab) of Combined Military Hospital Dhaka (CMH) over a period of 3 years, which lasts from January 1999 to December 2001. Any patient with Atrial septal defect, secundum type (ASD II°) confirmed by echocardiography was included in the study. Other types of ASD's like ASD primum and sinus venosus ASD were excluded. ASD in association with complex congenital heart diseases (CHD) like transposition of great arteries, Tricuspid atresia, pulmonary atresia, post septostomy ASD secundum were excluded. ASD II° in association with minor problems like mild pulmonary stenosis (PS), small to moderate size ventricular septal defect (VSD), patent ductus arteriosus were included in the study.

1. Paediatrician and Paediatric Cardiologist, AFMC
2. Assistant Professor,Thoracic Surgery, IDCH, Dhaka
3. Directorate Gen. Medical Services, Dhaka Cantt.

Each patients name, age, sex cause for referral to paediatric cardiologist were documented. Chest X-ray and ECG were reviewed first and then echocardiography was done. After confirming anatomical diagnosis by echocardiography, management plan was provided to each patient depending on the age and size of ASD, symptoms of the patients. Those with large ASD II°, age more than 5 years and symptomatic were referred to cardiac surgeon for ASD closure. Those who had above criteria but were asymptomatic were kept in follow up to allow spontaneous closure or for device closure in future. Device closure was starred from the beginning of this year and those who fulfilled criteria was selected for device closure. Some were advised for medical management and some with small ASD for follow up only. Cardiac catheterization was done in 40 cases. Indications were to do device closure in 7 cases, in rest 20 cases to calculate pulmonary vascular resistance and in another 13 to rule out PAPVD [partial anomalous pulmonary venous drainage]. For convenience of study patients were divided into 4 groups depending on the age (0 – 1 yr, >1 – 5 yrs, >5 – 10 yrs, > 10 years). According to the size of the ASD, ASD II° were divided also into 3 major groups (up to 4 mm, > 4 – 8 mm, > 8 mm). Special emphasis was given to those whose ASD closed spontaneously. Relationship of closure with the age of the patient, with the size of ASD's was sorted out. Every patient had given another appointment for next visit each time at 3-6 monthly intervals depending on the severity of the disease. Those whose ASD's were closed spontaneously were discharged from the cardiac out patient clinic. The patients who are still under follow up may follow any of the following course. Some of them may go for surgery; some for device closure and some of them may have spontaneous closure in future. The data was collected from the register and computer of the NIC lab and cardiac Catheter laboratory and tabulation was done manually.

Results :

Three hundred ninety three patients were enrolled in the study. All of them have ASD secundum type (ASD II°) whatever may be the size of ASD. Table 1 showed age distribution of the patients. Two hundred sixty six (67.68%) patients were in up to one-year age group, 69 (17.56%) were in 1 – 5 years group, 42 (10.67%) were in 5-10 yr group and 16 (4.07%) were in more than 10 yrs group. So most of the patients were in 1st group (up to 1 year age). Table II Showed sex distribution of the patients. Two hundred twenty nine (58.27%) were male and 164 (41.73%) patients were female. Table III Showed type of ASDII°. One hundred eighty two (46.31%) had small ASDII° or patent foramen ovale less than or equal to 4 mm. 116 (29.52%) patients had ASDII°, >4 – 8 mm in size and 95 (24.17%) patients has ASD more than 8 mm in size. So most of the patients had small ASD II°. Table IV showed the symptoms with which the patients were presented. One hundred three (26.21%) patients had history of recurrent respiratory tract infection, 37 patients (9.41%) had history of tachypnoea for which they visited doctors, 56 (14.25%) patients had H/O failure to gain weight despite of taking adequate diet, 20 (5.09%) presented with heart failure, 179 (45.55%) patients were asymptomatic. They were send for cardiac evaluation because of incidental findings of murmur. Most of the

Table-I

Age distribution n=393

Age	Number	Percentage
0-1 year	266	67.68
>1-5 yrs	69	17.56
>5-10 yrs	42	10.69
> 10 yrs	16	4.07

Table-II

Sex distribution n=393

Sex	Number	Percentage
Male	229	58.27
Female	164	41.73

Table-III

Type of ASD II° depending on size in study cases n=393

Size of ASD	Number	Percentage
4 mm or less	182	46.31
>4-8 mm	116	29.52
>8 mm	95	24.17

Table-IV
Symptoms on presentation n= 393

Symptoms	Number	Percentage
Recurrent respiratory tract infection	103	26.21
Tachypnoea	37	9.41
Failure to thrive	56	14.25
Congestive cardiac failure	20	5.09
Asymptamatic	179	45.55

asymptomatic patients were neonates and infants. Table V showed outcome of these 393 cases. In 80 (20.36%) cases ASD's were closed spontaneously, 27 (6.87%) had surgical closure, 5 (1.27%) had device closure of ASD with amplatzer device, 181 (46.05%) patients are still under follow up, 96 (24.43%) were lost from follow up and 4 (1.02%)

Table-V
Outcome of ASD cases n=393

Outcome	Number	Percentage
Spontaneous closure	80	20.36
Surgical closure	27	6.87
Device closure	5	1.27
Under follow up	181	46.05
Lost from follow up	96	24.43
Death	4	1.02

patient died. One patient was 22 yrs old, she died from sudden stroke and she was suffering from Eisenmenger syndrome. Other 3 died for septicemia, pneumonia and all those were in up to one-year age group. In 80 cases ASD's were closed spontaneously. These ASD cases were studied carefully to see which type of ASD and which age group was favorable for spontaneous closure. Table VI showed type of ASD's in spontaneously closed cases. In 42 (52.50%) cases ASD's were small in size (4 mm or less), in 22 (27.50%) cases ASD's were moderate in size (>4 – 8 mm) and in 16 (20%) cases ASD's were large (>8 mm) size. So small ASD's were more prone for spontaneous closure. Table VII showed age distribution of the spontaneously closed ASD cases. 42 (52.50%) patient were in up to 1 year age group. 25 (31.25%) patients were in 1 – 5 years age group, 8 (10%) and large ASD's. The age and size of ASD in our study was not uniform with those. In another study classic preponderance of girl over boys was observed only for defect >5 mm in size[5]. It is difficult to determine the incidence of ASD, because many cases are not discovered until the person is well beyond pediatric age group. ASD's are first recognized in any ages including octagenerians[6]. In this study 67.68% cases were

Table-VI
Type of ASD in spontaneously closed cases n=80

Size	Number	Percentage
4 mm or less	42	52.50
>4-8 mm	22	27.50
>8 mm	16	20

Table-VII
Age distribution of the spontaneously closed ASD cases n= 80 (Spontaneously closed ASD)

Age	Number	Percentage
0-1 yr	42	52.50
>1-5 yrs	25	31.25
>5-10 yrs	8	10
> 10 yrs	5	6.25

cases were in > 5 – 10 years age group and 5 (6.25%) cases were in more the 10 years age group. So ASD's were closed spontaneously in infancy mainly. Closure rate is low in older children, though it can occur in few cases. Frequency of closure for each type of ASD and in each age group was not considered, as the follow up time for every patient was not uniform.

Discussion :

ASD secundum (ASD II°) is one of the common congenital defects of heart, which constitute 6 – 10% of all congenital heart disease. It is more frequent in female than in male with ratio of 2:1[2]. In the present study male predominates over female (table-I). The reason may be that 67.68% of the cases in this study were infant (table-II) and ASD was small in size in 46.31% of the cases (table IV). So these cases had chance of early spontaneous closure. But the studies, which showed female preponderance, have children with older age group

detected in 1st year of life (table-II). The youngest baby in the study was 4 days old and the oldest one was 22 years old. The average age for ASD detection is usually 3 years[2]. Most infant with ASD is asymptomatic. We found 45.55% patient asymptomatic and they were diagnosed incidentally when examined for other reason. A small ASD can remain asymptomatic throughout life[7]. Recurrent respiratory tract infection (RTI) was observed in 26.21% cases. Recurrent RT1 was noticed in 30% of patient in one study, which is similar to our one[8]. Spontaneous closure of ASD was observed in 20.36% cases (table-V). A study conducted in less than 3 months old infant showed 87% spontaneous closure[5]. Closure rate is very high in young infant but our study was conducted over wide range of age, so the overall closure rate was low. Another study showed spontaneous closure rate of 14 to 66% of infant[4,9]. Spontaneous closure of ASD was documented in 39% of patients at ages ranging from 2 to 8 years[4]. The closure appear to be unrelated to symptoms, physical findings, non invasive studies and cardiac catheterization data[1]. In this study we tried to correlate at least two factors with spontaneous closure. One factor was size of ASD's (table-VI) and another was age of the patient (table-VII). It was noticed that 52.50% of spontaneously closed ASD cases had ASD size less than or equal to 4 mm. One study showed that 100% of this type of ASD will be closed spontaneously by 18 months of age[5]. Some of our patients were included in the study in the later part of study period who still have chance of spontaneous closure in subsequent follow up. In > 4 – 8 mm size ASD group this study showed 27.50% closure rate and for > 8 mm size ASD group closure rate was 20%. In Radzik et al study closure rate for 4 – 8 mm detect was 80%. For > 8 mm defect the study concluded that the chance for spontaneous closure is minimum[5]. In spontaneously closed ASD cases in the study 52.50% were in up to 1 year age group and 31.25% were in 1-5 years age group. Many study showed that spontaneous closure is unlikely to occur after childhood but conservative approach is supported by the fact that spontaneous closure has also been reported in childhood and adolescence[7]. In this study 5 (6.25%) cases had spontaneous closure after 10 yrs of age. A recent study says as many as 24% of newborn have evidence of an opening in the atrial septum (3 – 8 mm), in the first week of life, but by one year, 92% of the patients had spontaneous closure of opening[1]. Our study concluded that incidence of spontaneous closure is higher in infancy and in small size ASD cases. Other than spontaneous closure 6.87% cases had surgical ASD closure and 1.27% had device closure with amplatzer septal occluder (table-V). Device closure has been started in our hospital only for last one year. So the device closure will be more in future than surgical closure. Transcatheter technique for closure of secundum ASD have been in evolution since the original report by king and Mills in 1976. Clamshell device was found reasonably effective and safe in small to moderate size isolated secundum ASD's[10]. Paradoxical embolism through patent foramen ovale (PFO) may be an important cause for stroke in young adults. Transcatheter technique to close PFO with buttoned device is a good method of treatment of paradoxical embolism[11]. Buttoned type device are also used for ASD closure[12]. The buttoned device provided effective closure of the ASD in 79% in whom implantation was attempted and in 98% where device was successfully implanted. In our study, Amplatzer occluder was attempted in 7 cases and it was implanted successfully in 5 cases. Large number of patients in this study (46.05%) are still under follow up and majority of them have good chance of spontaneous closure in future, specially those who are young infant and who's ASD size is small. Four (1.02%) patient died during follow up. One died from sudden stroke and she had severe pulmonary hypertension. Other 3 are infants and they died from causes not directly related to ASD.

Conclusion :

This study was conducted on heterogeneous population group with wide range of age of the patients. All the patients were not under follow up for uniform period also. It will need another few years to complete the follow up of the rest of the patient and to see the total outcome. But it may be concluded from this study that the incidence of spontaneous closure of ASD is very high in infancy and in those patients who had small ASD size.

References :

1. Co - burn J. Porter MD, Robert H. Feldt MD, William D. Edward S M D et al. Atrial Septal Defects. In: George C. Emmanouilides, Hugh D Allen, Thomas A. Riemenschnedier, Editors. Moss and Adams Heart disease in infants children and Adolescents. Baltiamore: William and wilkins, 1995; 687-703.

2. Fyler DC. Atrial Septal Defect secundum. In: Nada' pediatric cardiology. Philadelphia: Hanley and Belfus, 1992: 513-524.

3. Campbell M: Natural history of atrial septal defect. British Heart Journal 1970; 32: 820-826.

4. Mahoni LT, Trusdell SC, krmarzick TR, Lauer RM. Atrial septal defects that present in infancy. Am J Dis childhood 1986; 140: 1115-1118.

5. Radzik D, Davignon A, Van Doesburg-N et al. Predictive factors for Spontaneous closure of atrial septal defects diagnosed in the first 3 months of life J-Am-coll-cardiol 1993; 22 (3): 851-853.

6. Paolcillo V, Dawkins KD, Miller GAH. Atrial Septal defect in patients over the age of 50. Ind J cardiol 1985; 9: 139-147.

7. Myriam Brassard MD, Jean-Claude Fouran MD, Nicolaas H Van Doesburg MD et al. Outcome of children with atrial septal defect considered too small for surgical closure. AM J cardiol 1999; 83: 1552 – 1555.

8. Cockerhaen JT, Martin TC, Gutierrez F-R et al. Spontaneous closure of secundum atrial septal defect in infants and young children. Am-J-cardiol 1983 Dec; 52(10): 1267-71.

9. Fukazawa M, Fukushige J, ueda K. Atrial septal defects in neonates with reference to spontaneous closure. Am Heart J 1988; 116: 123-127.

10. Lourdes R prieto MD, Cynthia K Foreman, John P. cheathyam MD et al. Intermediate term outcome of transcatheter secundum Atrial septal defect closure using the Bard clamshell septal umbrella. Am J cardiol Dec 1996; 78 (11): 1310-2.

11. Ende DJ, chopra PS, Ras PS. Trans catheter closure of Atrial septal defect or patent foramen ovale with the buttoned device for prevention of recurrence of paradoxical embolisms. Am J cardio1 Jul 1996; 78 (2): 233-6.

12. Lloyd TR, Rao PS, Beekman RH 3rd et al. Atrial septal defect occlusion with the buttoned device (A multi-institutional U.S trial). Am J cardio1 Feb 1994; 73 (4): 286-291.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

REVIEW ARTICLES

Paediatric Asthma – An Overview

Md. Solaman Siddique Bhuiyan[1], Md. Atiqur Rahman[2], Md. Abdus Shakur Khan3
Mirza Mohammad Hiron[4], Md. Mostafizur Rahman[5], B.K. Bose[6]

[Chest & Heart Journal 2003; 27 (1) : 36-40]

Introduction :

Among children, asthma is the leading cause of hospitalization, chronic disease, and school absenteeism. Children with asthma may be able to breathe normally most of the time. When they encounter a trigger, however, an "exacerbation" (or attack) can occur. In children with asthma, the airways that run from the nasal cavity down to the lungs are overly sensitive.

There are pockets of the population that have a higher frequency of asthma. For example, asthma seems to run in families. Boys are often more affected than girls. African-American children tend to have the highest incidence of asthma, followed by Latino children, and Caucasian children have a lower incidence. Children in the inner city are also much more affected than any other population

Causes and Their Pathogenesis

Allergy and asthma attacks are both provoked by environmental factors. Generally harmless substances such as dust, pollen, peanuts or cold air become "triggers" to the sensitized immune systems of people with allergies or to the inflamed airways of those who endure asthma.

Table-I

Indoor and Outdoor Triggers of Asthma

Indoor Triggers	Outdoor Triggers
• Dust and Dust Mites	• Cold air
• Mold	• Exercise
• Pet Dander	• Pollen
• Colds and flu	• Insect stings
• Tobacco smoke	• Exhaust Fumes
• Wood burning smoke	
• Perfume	
• Aerosol sprays	
• Foods (shellfish, nuts, dairy products)	
• Medications	
• Cockroach debris	

Heredity: It seems that asthma runs in families. Children with parents or siblings who have asthma are more likely to become affected with the illness.

Atopy: A person who is prone to allergies is described as being atopic. This tendency to develop allergies seems to be inherited. Those who have atopy seem to also be at greater risk for becoming asthmatic.

Homes everywhere in the world are full of two uninvited, but common allergens (generally harmless substances that can cause allergic reactions), dust mites and mold.

Dust mites are tiny spiders that can only be seen with a microscope. Household dust is a dust mite's castle. Their favorite room is the bedroom where they feed on the large portion of the skin flakes we shed. They love warm and humid air. The thousands of mites that inhabit just a pinch of dust leave up to 200 times their body weight in waste. This waste contains a protein that is an allergen for many people.

Molds also thrive in humidity: Bathrooms, kitchens and basements are their comfort zones. Household mold and mildew produce microscopic spores (seeds) that are released when humidity is high. These spores are allergens that can cause hay fever-like symptoms when they attach themselves to the lining of the nose. If the spores reach the lungs they can cause asthma and other serious illnesses.

Viral Triggers: Colds and flu are caused by different viruses, but both are common allergy and asthma triggers. Rhinovirus has been linked to nearly 75% of all wheezing attacks that send children from 2 to 16 years old to the emergency room[1].

Colds and Respiratory infections affect the same air passages already sensitized by asthma and can serve to trigger further symptoms.

1. Asstt. Professor, Respiratory Medicine, NIDCH, Dhaka
2. Associate Professor, Respiratory Medicine, NIDCH, Dhaka
3. NIDCH, Dhaka
4. Associate Professor of Medicine, NIDCH, Dhaka
5. Professor of Respiratory Medicine, NIDCH, Dhaka
6. NIDCH, Dhaka

Other Risk Factors

Weather: Cold Air, sudden changes in weather, wind and rain can all trigger an asthma attack.

Insect Stings: In some cases an insect sting can trigger an asthma attack. Tightening of the throat and bronchial spasms might occur as part of a generalized reaction to the sting, but could be more severe in a person with asthma

Some asthma sufferers react to a few of these triggers while others are sensitive to many of them. For some children it takes a combination of triggers to provoke an attack. Symptoms do not always occur right after exposure to a trigger. They can appear several minutes to a few hours later.

Diagnosis

A physical examination will be included to help determine possible other causes for symptoms such as nasal polyps, sinus infection or asthma. General examination specially examination of skin, eyes, nose, ears, lungs and abdomen are to be done. The following diagnostic tests are helpful:

- Blood tests
- Lung x-rays
- Pulmonary function tests
- Cultures to detect infection

Table-II

Warning signs for children may include[2]

• An audible whistling or wheezing when child exhales
• Coughing, especially if the cough is frequent and occurs in spasms
• Waking at night with coughing or wheezing
• Shortness of breath, which may or may not occur when child exercises
• A tight feeling in the child's chest

Allergy tests may be recommended if a diagnosis proves to be elusive.

- Elimination Diet- If a food allergy is suspected, doctor may recommend an "elimination" diet. First the suspected food(s) are removed from the patient's diet for several weeks. Then they are re-introduced one at a time while the patients is observed for signs of an allergic reaction.
- Skin Tests- Considered to be generally accurate and comprehensive, skin tests are the most common form of allergy testing. They are best for determining airborne allergens such as dust, pollen, pet dander and molds and are somewhat less reliable for food allergens.
- Scratch Test- A small amount of the suspected allergen is placed on the skin (forearm, upper arm or back). The skin is then scratched or pricked, introducing the allergen under the surface. Several allergens can be tested at the same sitting.
- Intradermal Test- A small amount of the supposed allergen is injected under the surface of the skin.

In both forms of testing the skin is observed closely for a reaction. Reactions take about 20 minutes to appear and can include swelling and redness or a controlled hive at the spot where the allergen was introduced.

- RAST Test - A RAST Test is a blood test. If there is a "true" allergic reaction, IgE antibodies are present in the blood. This test checks for the amount of the IgE antibodies.

Treatment Plan

While there is no cure for asthma, asthma management programs can help people lead full and active lives. It is now possible to control symptoms so that they can be relieved or even eliminated.

Table-III

Classification of Asthma Severity

	Severity Prior to Initiation of Therapy			
	Mild Intermittent	Mild Persistent	Moderate Persistent	Severe Persistent
Symptoms	< or = 2 per week	> 2 per week	daily symptoms	continual symptoms
Nighttime symptoms	< or = 2 per month	> 2 per month	> 1 per week	frequent
Lung function	< or = 80% predicted	< or = 80% predicted	> 60% -< or = 80%	< or = 60%
Peak flow variability	< 20%	20-30%	> 30%	> 30%

Avoiding Triggers

Once the offending triggers are defined it will be easier to start a program to control symptoms. Total avoidance of triggers isn't often possible, but minimizing them can make a significant difference in the quality of life.

Lines of Defense

1. The first line of defense is avoiding the triggers that can provoke an asthma attack.
2. The second line of defense is quick relief medication. Using inhaled beta-agonist bronchodilators during an asthma flare-up can provide immediate relief.
3. The third line of defense is anti-inflammatory medications that prevent asthma attacks. Corticosteroids, cromolyn and leukotriene receptor antagonists are long-term medications that reduce the inflammatory response to triggers, thus helping to keep the airways clear for easier breathing.

Table-IV

Asthma Medications

Long Term Control RX	Quick-Relief Medications
Corticosteroids***	Short-acting beta-agonists*
Cromolyn/nedocromil* *	Anti-cholinergics*
Leukotriene modifiers"	Systemic glucocorticosteroids***
Methylxanthines**	
Long-acting beta-agonists*	

***Most potent and effective anti-inflammatory agents

"Some anti-inflammatory activity

*No demonstrated anti-inflammatory activity

In June 2002, the National Asthma Education and Prevention Program (NAEPP) issued updated asthma treatment guidelines recommending inhaled corticosteroids as a safe, effective and preferred first-line therapy for both children and adults who have persistent asthma.

The NAEPP also found that an inhaled corticosteroid plus a long-acting inhaled bronchodilator may work better than inhaled corticosteroids alone for some people with moderate, persistent asthma.

Acute Symptom Relief

Bronchodilators are medications that open up constricted airways and provide temporary relief of asthma symptoms. Bronchodilators may be short acting or long acting and include:

- Beta-2 agonists: Short-acting beta-2 agonists begin working within minutes and last 2 to 4 hours. Long-acting beta-2 agonists last up to 12 hours. The short-acting medications are typically prescribed for relief or prevention of asthma symptoms or flare-ups. The most common drugs, such as salbutamol act quickly to relieve symptoms and can be used as a prevention measure before exercise or breathing cold air. Prescribed as needed, they may relieve symptoms for up to 6 hours. Inhaled beta-2 agonists won't correct underlying inflammation, however, and can easily be overused.
- Ipratropium: This bronchodilator is an anticholinergic that isn't typically recommended for the immediate relief of asthma symptoms.
- Salmeterol and formoterol: These long-acting bronchodilators relieve airway constriction for up to 12 hours. They're generally used to prevent symptoms, especially at night. They aren't recommended as a "rescue" medication that can be used for immediate relief during an asthma attack.
- Theophylline: This type of bronchodilator is taken in pill form every day. It's especially helpful for relieving nighttime symptoms of asthma. But theophylline may cause side effects, including nausea and vomiting, severe abdominal pain, diarrhea, confusion, fast or irregular heartbeat, and nervousness. It can also promote GERD or acid reflux by relaxing the lower esophageal sphincter muscle. Regular blood tests are recommended to setup the correct dosage[3].

Long-term Anti-inflammatory Treatment

Anti-inflammatory drugs are the mainstay medications for asthma. These drugs are taken

continually to prevent attacks. Anti-inflammatory drugs reduce inflammation in your airways and prevent blood vessels from leaking fluid into airway tissues. The most widely used of these drugs include:

- Corticosteroids: These drugs are the most effective medications for asthma. Different kinds of corticosteroids include prednisone, prednisolone, cortisone, triamcinolone, hydrocortisone and others. They help decrease the frequency of attacks and lower the dosage of other medications needed to calm symptoms. Long-term use of oral or intravenous corticosteroids can cause serious side effects. Inhaled corticosteroids deliver medication directly to your airways and so have fewer side effects. They're also very effective at controlling most forms of asthma. These medications may include beclomethasone, fluticasone, budesonide, and flunisolide. Because inhaled corticosteroids may affect some children's growth, children taking these medications should have their growth rate regularly monitored[4]. Long-term use of inhaled corticosteroids may increase the risk of cataracts[5].
- Leukotriene modifiers. Introduced in 1996, leukotriene modifiers were the first new class of prescription asthma medications to become available in 20 years. These drugs work by reducing the production, or blocking the action, of leukotrienes - substances released by cells in yew lungs during an asthma attack. Leukotrienes cause the lining of airways to become inflamed, which in turn leads to wheezing, shortness of breath and mucus production. By themselves, leukotriene modifiers are about as effective as theophylline and cromolyn, but used in conjunction with other medications, they may help prevent more attacks. Although generally not as effective as inhaled corticosterioids, leukotriene modifiers are an option.

Cromolyn: Daily use of inhaled cromolyn (Intal) or nedocromil (Tilade) may help prevent attacks of mild to moderate asthma. In some cases they may also help prevent asthma triggered by exercise if taken an hour before any vigorous activity.

Asthma Action Plan

An asthma action plan is a plan provided by a pediatrician or other doctor that gives instructions on how to follow a child's asthma and what to do when symptoms increase. Families can use this plan to monitor a child's asthma, to anticipate attacks, and to make best use of the medications provided.

Inhaled steroids are used on a daily basis to decrease the over reactivity of the airways. When steroids are inhaled, they travel directly to the lungs. This way, a minimal amount is absorbed through the rest of the body. Inhaled steroids usually do not have any systemic effects unless they are used in high doses for a long time.

Preventive Measures

1. Parents are advised to talk to the pediatrician about using a peak flow meter to monitor the child's lung function.
2. Education: Parents are taught to identify the triggers that provoke asthma symptoms in

Table-V

Step Therapy Based on Asthma Severity

Classification	Quick Relief	Long-Term Control
Step 1: Mild Intermittent	prn	None.
Step 2: Mild Persistent	prn	Single agent with anti-inflammatory activity.
Step 3: Moderate Persistent	prn	Inhaled corticosteroids, add long-acting bronchodilator if needed.
Step 4: Severe Persistent	prn	Multiple long-term control medications. Add oral corticosteroids if needed.

their child and the severity of his or her condition

3. Avoidance: Total avoidance of, trigger factors isn't often possible, but minimizing them can make a significant difference in the severity of child's asthma symptoms.
4. Medications: A selection of medications exists to control asthma.
   - Some are for immediate relief of asthma symptoms (bronchodilators)
   - Others are taken to prevent the onset of symptoms (cromolyn)
   - A few control airway inflammation over the long haul (corticosteroids).
5. They should inform teachers and friends about their asthma. In this way they can avoid surprising or scaring people who could be helpful during a potential episode

Effective Actions Parents Can Take: Parents are advised to maintain the following: For Dust Mites

- Allergen-impermeable covers on mattress and pillows are to be used.
- Carpets from the bedroom are to be removed.
- Plastic or washable materials for window coverings are to be used.
- Clothes in plastic bags in the closet are preferable to keep.
- A filtering mask may be used during cleaning the house.

For Molds

- Reducing dampness in the bathroom by installing an exhaust fan or keeping the window open whenever possible. '
- Repairing plumbing leaks immediately.
- Old books, newspapers, bedding and clothes should be recycled.
- Plants can form mold so be checked frequently or kept outside.

Consider Immunotherapy

If these anti-dust mite and mold measures don't reduce symptoms, physician may suggest immunotherapy (allergy shots). Miniscule amounts of the offending allergens are injected regularly over a 2 to 5 year span. The amount of the allergen extract is gradually increased, building your tolerance over time. As the treatment progresses sensitivity to the specific allergen reduces and reactions become milder.

New Concepts

A treatment known as immunotherapy (allergy shots) could be helpful if the triggers are insect stings or inhaled allergens such as pollens, molds, house dust and dander. Given over a term of 2 to 5 years, allergy shots increase the patient's tolerance to the offending triggers and could provide him with long-term relief.

References:

1. Dykewicz MS, Fineman S, Skoner DP. Diagnosis and management of rhinitis: complete guidelines of the Joint Task Force on Practice Parameters in Allergy, Asthma and Immunology. American Academy of Allergy, Asthma and Immunology. Ann Allergy Asthma Immunol. 1998; 81(5 Pt 2):478-518.
2. National Heart, Lung, and Blood Institute: National Asthma Education and Prevention Program: Report of the Second Expert Panel on the Guidelines for the Diagnosis and Management of Asthma. US Dept. of Health and Human Services Publication No. 97-4051. Bethesda, MD: National Institutes of Health, April 1997.
3. Tinkelman DG, Reed CE, Nelson HS, Offord KP. Aerosol beclomethasone dipropionate compared with theophylline as primary treatment of chronic, mild to moderately severe asthma in children. Pediatrics. 1993; 92 : 64-77.
4. Salvatoni A, Nosetti L, Broggini M, Nespoli L. Body composition and growth in asthmatic children treated with inhaled steroids. Ann Allergy & Immunology. 2000;85:221-26.
5. Cumming RG, Mitchell P, Leeder SR. Use of inhaled corticosteroids and the risk of cataracts. N Engl J Med. 1997 ;337 : 8-14.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

Allergic Bronchopulmonary Asper Gillosis : An Update

Md. Solaman Siddique Bhuiyan[1], Asif Mujtaba Mahmud[1], Md. Mohiuddin Ahmad[1], Md. Mizanur Rahman[2], AFM Kamaluddin[3], Mohammad Abdus Shakur Khan[4], Md. Rashidul Hassan[5], Mirza Mohammad Hiron[5], Md. Mostafizur Rahman[6]

Abstract :

Allergic bronchopulmonary asper gillosis (ABPA) is an immunologically mediated lung disease which occurs predominantly in patients with asthma, and is caused by hypersensitivity to colonized Aspergillus fumigatus. It is a chronic, relapsing disorder which can clinically range from mild asthma to fibrotic lung disease. The immunopathogenesis of the disease is not clearly understood. Early diagnosis and aggressive therapy with oral corticosteroids can prevent the development of fibrotic lung disease and are, therefore, the cornerstone of management.

***Key Words** : ABPA, update*

[Chest & Heart Journal 2003; 27 (1) : 41-47]

Introduction :

The spectrum of Aspergillus-associated respiratory disorder ranges from saprophytic colonization of the respiratory tract to rapidly invasive disseminated disease. For clarity sake, it can be broadly clasified into three clinical categories, viz. allergic aspergillosis, aspergilloma and invasive aspergillosis, (Table I).

Allergic bronchopulmonary aspergillosis (ABPA), the most frequently recognised manifestation of aspergillosis, occurs worldwide[1]. It is an immunologically mediated jung disease which usually occurs in atopic individuals and is caused by hypersensitivity to the antigen of the fungus Aspergillus especially A. fumigatus. Although ABPA is predominantly a disease of the asthmatics, only a very few .asthmatics actually suffer from it. Furthermore, inspite of familial preponderance of asthma, familial occurrence of ABPA is a rarity[2]. The explanation for this still remains a subject of speculation. The exact prevalence of disease is not known but contemporary western estimates suggest that ABPA complicates 1-6% of all chronic cases of asthma. Allergic Aspergillus sinusitis (AAS) is a more recently recognised; clinical entity in which mucoid impaction similar to that of ABPA occurs in the paranasal sinuses[3].

Table-I

Aspergillus associated respiratory disorders

I.	Allergic aspergillosis.
	Allergic bronchopulmonary aspergillosis (ABPA)
	IgE mediated asthma
	Hypersensitivity pneumonitis
	Allergic Aspergillus sinusitis (AAS)
II.	Saprophytic colonization
	Aspergilloma
III.	Invasive disease
	Invasive disseminated aspergillosis
	Chronic necrotizing pneumonia.

The Organism

The fungus. Aspergillus derives its name from its resemblance to brush used for sprinkling holy water called aspergillum. The main pathogenic species are A. fumigatus (accounts for about 95% of Aspergillus-related illness in humans), A. flavus, A. niger, A. terreus and A. nidulans. The fungi exist only in mycelial form and are thermotolerant,

1. Asstt. Professor, Respiratory Medicine, NIDCH, Dhaka
2. Medical Officer, OPD, NIDCH, Dhaka
3. Registrar, NICH&R, Dhaka
4. MD (Chest Diseases) Student Thesis Part, NIDCH, Dhaka
5. Assoc. Professor, Respiratory Medicine, NIDCH, Dhaka
6. Professor, Respiratory Medicine, NIDCH, Dhaka

capable of growing at temperatures between 15-53°C, the optimum being 37-40°C.

These ubiquitous organisms can be easily isolated from growing or stored vegetation, decaying organic matter, fallen leaves, soil or air. The spores are dispersed by wind in the atmosphere. thus, inhalation is the primary route of infection for most cases of all forms of aspergillosis. Spore counts show seasonal variations, higher counts associated with increase in the exacerbation of ABPA[4].

Diagnostic Criteria

The diagnostic criteria[5,6] of ABPA are summarised in Table-II. A series of diagnostic criteria is required as apart from demonstration of central bronchiectasis (CB) there is no individual test, which establishes the diagnosis or is not affected by therapy with oral prednisolone. The presence of central/proximal bronchiectasis in the absence of distal bronchiectasis is considered a sine qua non for the diagnosis of ABPA and when present, the patient can be categorised as ABPA-CB. However, CB may also extend to the periphery in a small number of segments[7]. It is now recognised that a group of patients presenting at an earlier stage of the disease or with milder form of the disease may not have CB. Such seropositive patients who satisfy all the criteria for ABPA except CB can be categorised as ABPA-S, and treatment commenced to prevent further lung damage.

Table-II

Diagnostic criteria for ABPA

Major criteria
asthma
presence of radiologic infiltrates
immediate cutaneous reactivity to A. fumigatus
elevated total serum IgE
precipitating antibodies against A. fumigatus
peripheral blood eosinophilia
elevated serum IgE and IgG to A. fumigatus
central/proximal bronchiectasis with normal tapering of distal bronchi
Minor criteria
expectoration of golden brownish sputum plugs
positive sputum culture for Aspergillus species
late (Arthus-type skin reactivity to A. fumigatus

Clinical Features

An indolent disease with a protracted course, clinically ABPA can range from mild asthma to fatal destructive lung disease. It is characterized by repeated episodes of exacerbation interspersed with periods of remission, culminating if untreated in fibrotic lung disease, which resembles the chronic fibrocavitary disease of pulmonary tuberculosis. Although it can occur at any age, the patient is usually in the 20-40 years age-group and often presents with poorly controlled asthma and peripheral eosinophilia. The symptoms may also be due to pulmonary consolidation and the patient may present with cough, purulent sputum, wheezing, dyspnoea, fever and malaise, chest pain and even haemoptysis. Expectoration of golden brownish sputum plugs is not uncommon and should raise the possibility of AMAPA[8]. Patients with chronic fibrotic disease may present with cyanosis and respiratory failure. However, symptoms appear to bear little or no relationship to severity orchronicity of the disease, as a third of the patients may be relatively asymptomatic inspite of extensive radiological lesions. Allergic bronchopulmonary'aspergillosis may also be associated with other clinical allergic diseases in the form of rhinitis, conjunctivitis, skin and food allergies.

With rare exceptions, the clinical catetgories of Aspergillus related respiratory disorders usually remain mutually exclusive. Co-existent ABPA with aspergilloma, though infrequent, has been reported[9,10,11], but inspite of similar immunopathologic responses, concomitant occurrence of ABPA and AAS is a rarity[12], while association of ABPA, AAS and aspergilloma in a single patient has been document, only once[13]. Syndromes similar to ABPA caused by fungal species other than Aspergillus also occur, but appear to be rare. Collectively, they are known as allergic bronchopulmonary funguses (ABPF).

Physical examination in ABPA may be completely unremarkable in the asymptomatic patient or it may reveal rhonchi, crackles and bronchial breathing depending on the degree of lung disease present. If extensive fibrosis has resulted from ABPA, crackles may be heard in affected areas,

which do not clear after tussive effort or after treatment with oral corticosteroids. Some patients with end features of corpulmonale. Associated hypertophic osteoarthropathy has also been reported[10].

Radiology

Radiological changes[14,15,16] may be transient or permanent (Table-III). The former may be the result of mucoid impaction, secretions in the damaged bronchi and parenchymal infiltrates, these may clear with or without therapy with corticosteroids. Chest radiological changes, most commonly seen in the upper lobes, can closely resemble those seen in tuberculosis, but serial radiographs in ABPA may reveal transient nature of pulmonary infiltrates, also know as fleeting shadows[13]. The patient may also present with lobar or segmental collapse. Ipsilateral pelural effusion with collapse in a case of ABPA has also been reported[13]. Of the permanent changes, the most important one is central/proximal bronchiectasis with normal peripheral bronchi, a pathognomonic feature of ABPA. While presenting the CT appearances in 23 patients with ABPA, we identified CB in all patients involving 85% of the lobes and 52% of the segments studied. Central bronchiectasis extended to the periphery in 34% of these lobes and at the segmental level, peripheral to the periphery in 34% of these lobes and at the segmental level, peripheral broncliiectasis was identified in 21 % of the segments[7]. It is believed that bronchiectasis occurs in areas with previous radiological lesions which may result in fibrosis[9]. Demonstration of CB is considered a sine qua non for the diagnosis of the diseases for which bronchography was regarded as a gold standard. However, computed tomography (CT) of the thorax is now accepted as an effective alternative in the diagnosis of bronchiectasis. We have shown that CT in comparison to bronchography, a procedure thought to be unsafe in asthma, has a sensitivity of 83% and a specificity of 92% in dectecting CB in patients with ABPA and could thus be the investigation of choice[17]. Computed tomograms also enabled us to rapidly and safely establish the diagnosis in children with ABPA who presented with acute severe asthma[18]. Bronchiectasis on CT is characterized by 'string of pearl' and 'signet ring' appearances as described by Webb et al[19]. Although cavitation is not a common feature of ABPA, it can occur along with the fibrotic stage of ABPA[16] when it may be difficult to distinguish from fibrocavitary pulmonary tuberculosis[10,11,20]. Interestingly, CT scans revealed pleural involvement in 43% of the patients, a feature yet to be highlighted. However, it may not be of major clinical significance[7]. Computed tomography of the thorax provides a sensitive method for assessment of bronchial, parenchymal and pleural abnormalities in cases of ABPA and should constitute a part of the initial work up of the disease[7].

Laboratory Findings

Immediate cutaneous reactivity to Aspergillus antigens is invariably positive but is also positive in 25% of asthmatic without ABPA[21] A delayed Arthus type reaction can also be seen. Peripheral blood eosinophilia is not uncommon and during exacerbation most patients have an absolute eosinophil count between 1000 to 3000 per cumm, unless the patient is already on therapy with prednisolone. In a patient who has a productive cough, sputum eosinophilia is often present and sputum culture may yield Aspergillus species in about 58% cases[8].

Serological tests are valuable in the diagnosis of ABPA. Precipitating antibodies against A. fumigatus, as demonstrated by double immunodiffusion technique of Quchterlony, can be detected in 90% of patients with a radiological infiltrate but may require serum to be concentrated five-folds[8]. Precipitating antibodies may also be present in 10% of asthmatics who do not have. ABPA[21]. Total serum IgE levels are generally greater than 1000 IU/ml and may be as high as 20,000 IU/ml in acute cases except in cases who are in remission or on therapy with prednisolone. It is a useful monitor of therapy as a fall of 35% in eight weeks is suggestive of effective therapy while doubling of remission values indicates an exacerbation in an asymptomatic patient[3].

Table-III

Radiological changes in ABPA

Transient changes
Perihilar infiltrates simulating adenopathy.
Air-fluid levels from dilated central bronchi filled with fluid and debris
Massive consolidation-unilateral or bilateral Radiologic infiltrates
'toothpaste' shadows due to mucoid impactions in damaged bronchi
'gloved finger' shadows from distally occluded bronchi filled with secretions
'tramline' shadows representing oedma of the bronchial walls
Collapse - lobar or segmental
Permanent changes
central bronchiectasis with normal peripheral bronchi
Parallel-line shadows representing bronchial widening
Ring-shadows 1-2 cm in diameter representing, dilated bronchi en face
Pulmonary fibrosis
Late changes-cavitation contracted upper lobes and localized emphysema

A difficult diagnostic problem in ABPA is to differentiate a patient ABPA from a patient with asthma and immediate cutaneous reaction to Aspergillus. This can be done by comparing serum IgG and IgE antibody activity against A. fumigatus (IgG-Af and IgE-Af) in both groups of patients. In ABPA, double the serum values of IgG-Af and IgE-Af are found as compared to asthmatic with a positive immediate cutaneous reaction to Aspergillus. In an appropriate clinical setting, the high serum levels of IgG-Af or IgE-Af can be diagnostic of AMAPA[3,6].

Pulmonary Function Testing

Pulmonary function testing in ABPA is relatively insensitive and does not help to define the extent of disease or exclude it. Patient in remission can have normal lung Volumes and flow rates if the asthma is well-controlled even in the presence of bronchiectasis. During an acute episode, pulmonary function testing may show a seduction in total lung capacity (TLC), vital capacity (VC), forced expiratory volume in frst second (FEV1) and impaired diffusion capacity for carbon-monixide (Dlco) but return to baseline after therapy with prednisolone. Patients with fibrotic lung disease typically have reduced lung volumes, low diffusion capacity and irreversible airflow obstruction[22].

Pathologic Findings

Pathological changes[14] include dilated bronchi containing tenacious mucus and fibrin as well as changes characteristic of asthma such as Curschmann's spirals, Charcot Leyden crystals within the lumen and airway inflammation with eosinophils and mononuclear cells. Fungal hyphae may be seen in the bronchial lumen but do not invade the bronchial wall or parenchyma. Cellular infiltrates, especially activated eosinophils, are present which is indicative of an inflammatory-reaction rather than an immune complex mediated mechanism at the site of bronchial wall destruction[23].

Immunopathogenesis

As mentioned earlier, it is still not known as to why some patients with asthma develop ABPA. The immune mediated mechanisms of lung destruction are largely unknown. It is thought that viscid sputum present in susceptible asthmatics traps A. fumigatus spores permitting the thermotolerant fungus to colonise the airways, injure the bronchial epithelium and permit absorption of the A: fumigatus antigens. This evokes a polyclonal antibody response[17] leading to elevated total IgE and A. fumigatus specific IgE, IgG and IgA antibodies indicating a humoral and cellular TH2- immunoligic response. This strong humoral and cellular response points towards an immuno-competent and activated defense system against the pathogenic fungi. A glycoprotein antigen with an apparent molecular weight of 45 kD predominant in the circulating immune complexes was recently isolated from patients with ABPA. It appears that there are two major components involved (1) chronic exposure to A. fumigatus and (2) an exaggerated host response involving cytokine release[27] lymphocyte sensitization and complement activation, which could result in lung damage. A recent report has shown that lung surfactant proteins A and D can inhibit the ability of allergic-specific IgE from patients with ABPA and may thus be involved in the modulation of allergic sensitization and/or

development of allergic reactions in these patients[28].

Treatment

The goals of treatment of ABPA are (1) to detect and treat ABPA exacerbations promptly so as to prevent or minimize bronchiectasis that develops at the site of infiltrates; (2) manage associated asthma irreversible lung disease; (3) exclude ABPA in family members, and (4) identify a potential environmental source of the incriminated fungus.

Oral corticosteroids are most effective and remain the cornerstone for the treatment of ABPA. For stages I (acute) and III (exacerbation), prednisonone is given 0.5mg/kg/day as a single morning dose for two weeks and then converted to an perhaps monthly for the first year, is a valuable monitor as total serum IgE declines by at least 35% within two months of initiating prednisolone therapy and is associated with resolution of the acute infiltrate on chest radiology.

After three months of alternate-day prednisolone, therapy and reduction of total serum IgE to a baseline concentration (the baseline total serum IgE can remain elevated despite clinical and radiological improvement), prednisolone can be tapered off. Stage IV ABPA patients are managed with prednisolone, usually on alternateday dose of 10-40mg for several years as repeated attempts to discontinue it may result in unacceptable wheezing. If prednisolonel can' be discontinued, the patient should be evaluated monthly or every 6 weeks initially to help determine whether remission (stage II) is maintained or whether the patient goes into stage III or IV. Stage V patients may require daily prednisolone, and when marked lung destruction occurs, they require continuous therapy for corpulmonale and arterial hypoxaemia.

Many other agents such as antifungal agents, cromolyn sodium and inhaled steroids have been tried but have not proved to be beneficial. Anti-asthma therapy may be needed for control of asthma but they do not prevent exacerbation of ABPA.

Conclusion :

In conclusion, a high index of suspicion is required to establish a diagnosis of ABPA which should excluded in patients with history of increasing severity of asthma, a positive -immediate cutaneous reactivity to A. fumigatus, history of recurrent pneumonitis, transient pulmonary infiltrates and bronchiectasis. In our country, mycoserological investigations are not widely available while radiological investigations like bronchography and CT scan are not easily done. This results in diagnostic delay and increased morbidity. Furthermore, the remarkable radiological similarity to pulmonary tuberculosis has important clinical implications as patients with ABPA often receive anti-tuberculous therapy for a long time while lung damage continues to progress silently. Early diagnosis and appropriate therapy could alter the progress of the disease and prevent the development of end-stage lung fibrosis.

References :

1. Shah A. Allergic bronchopulmonary aspergillosis: An emerging disease in India (editorial). Indian J Chest Dis Allied Sd 1994; 36: 169-172.
2. Shah A. Khan ZU. Chaturvedi S. Bazaz Malik G, Randhawa HS: Concomitant allergic Aspergillus sinusitis and allergic bronchopulmonary aspergillosis associated with familial occurrence of allergic bronchopulmonary aspergillosis Ann Allergy 1990; 64.: 507-512.
3. Greenberger PA. Allergic bronchopulmonary aspergillosis In: Middleton E (Jr), Reed CE. Ellis EF. Franklin AN (Jr.), Yunginger JW, Busse WW ed. Allergy: Principles and Practice; 4th ed. St. Louis: CV Mosby Co; 1993; 1395-1414.
4. Shah A. Khan ZU, Sircar M, Chaturvedi S. Bazaz Malik G, Randhawa HS. Allergic Aspergillus sinusitis : An Indian report.' Respir Med 1990; 84 : 249-251.
5. Rosenberg M. Patterson R. Mintzer R. Cooper BJ. Roberts M. Harris KE.Clinical and immunological criteria for the diagnosis of allergic bronchopulmonary aspergillosis. Arm Intern Med 1977; 86: 405-414.
6. Wang JLF. Patterson R, Rosenberg M, Roberts M, Cooper BJ. Serum IgE and IgG antibody activity against Aspergillus fumigatus as a diagnostic aid in allergic bronchopulmonary aspergillosis. Am Rev Respir Dis 1978; 117: 91792.

7. Panchal N, Bhagat R, Pant C, Shah A. Allergic bronchopulmonary aspergillosis : The spectrum of computed tomography appearances. Respir Med 1997; 91: 213-219.
8. Mccarthy OS, Pepys J. Allergic bronchopulmonary aspergillosis: Clinica immunolog and clinical features. Clin Allergy 1971; 1 : 261-286.
9. Safirstein BH, D'Souza MF, Simon G, Tai EHC.,Pepys J. Five year follow up of bronchopulmonary aspergillosis. Am Rev Respir Dis 1973; 108 : 450-459.
10. Shah A, Khan ZU. Chaturvedi S. Ramachandran S,Randhawa HS, Jaggi OP. Allergic bronchopulmonar aspergillosis with, co-existent aspergilloma. A long term follow up. J Asthma 1989; 26 : 109-115.
11. Agarwal AK, Bhagat R, Panchal N. Shah A. Allergic bronchopulmonary aspergillosis with aspergilloma mimicking fibrocavitary pulmonary tuberculosis. Asian Pacific J Allergy Immunol 1996; 14 : 5-8.
12. Shah A, Bhagat R, Panchal N, Jaggi OP. Khan ZU. Allergic bronchopulmonary aspergillosis with middle lobe syndrome and allergic Aspergillus sinusitis. Eur Respir J 1993; 6 : 917-918.
13. Bhagat R, Shah A, Jaggi OP, Khan ZU. Concomitant allergic bronchopulmonary aspergillosis and allergic Aspergillus sinusitis with an operated aspergilloma. J Allergy Clin iminunol 1993; 91: 1094-1096.
14. Mc'Carthy DS. Simon G, Hargreave FE. The radiological appearances in allergic bronchopulmonary aspergillosis. Clin Radiol 1970; 21 : 366-375.
15. Mintzer RA, Rogers LF, Kruglik GD. The spectrum of radiological findings in allergic bronchopulmonary aspergillosis. Radiology 1978; 127 : 301-307.
16. Phelan MS. Kerr IH. Allergic bronchopulmonary aspergillosis: The radiological appearance during long term follow up. Clin Radil! 1984; 35 : 385-392.
17. Panchal N. Pant CS. Bhagat R. Shah A. Central bronchiectasis in allergic bronchopulmonary aspergillosis : Comparative evaluation of computed tomography of the thorax with bronchography. Eur RespirJ 1994; 7 : 1290-1293.
18. Shah A. Pant; CS, Bhagat, R. Panchal N. CT in childhood allergic bronchopulmonary aspergillosis. Pediacr Radiol 1992; 22 : 227-228.
19. Webb WR. Muller NL, Naidich OP. ed. High-resolution CT of the Lung; 2nd ed New York: Lippincott - Raven Publishers. 1996; 257-258.
20. Shah A. Bhagat R. Panchal N. Childhood allergic bronchopulmonary aspergillosis with clubbing and cavitation. Indian Pediatr 1993; 30 : 248-25 1.
21. Schwartz HJ. Atron KM. Chester EH. et al. A comparison of sensitization to Aspergillus antigens among asthmatics in Cleveland and London. J Allergy Clin Immunol 1978; 62 : 8-14.
22. Nichok D. DoPico GA. Braun S. Imbeari S. Peters ME. Rankin J. Acute and chronic pulmonary function changes in - allergic bronchopulmonary aspergillosis. Air. J Med 1979; 67 : 631-637.
23. Slavin RG, Bedrossian CW, Hutcheson PS et al. A pathological study of allergic bronchopulmonary aspergillosis. J Allergy Clin Immunol 1988; 81 : 718-725.
24. Bhatnagar PK, Banerjee B, Shah A, Sarma PU. Probable role of IgG subclasses in patients with allergic bronchopulmonary aspergillosis. Serodiogn Immunother Infec Dis 1993; 5 : 123-124.
25. Kauffman HF, Tomee JFC, Vander Werf TS, DeMonchy JGR, Koeter GK. Review of fungus induced asthmatic reactions. Am J Respir Crit Care Med 1995; 151 : 2109-2116.
26. Madan T, Banerjee B, Bhatnagar PK, Shah A, Sarma PU. Identification of 45 kD antigen in immune complexes of patients of allergic bronchopulmonary aspergillosis. Mole Cell Biochem 1997; 166 : 111-116.
27. Bhatnagar PK, Banerjee B, Shah A, Sarma PU. Circulating complement (C3), C3 and

immune complexes in ABPA patients. Serodiagn Immunother Infec Dis 1990; 4 : 481-485.

28. Madan T, Kishore U, Shah A, et al. Lung surfactant proteins A and D can inhibit specific IgE binding to the allergens of Aspergillus fumigatus and block allergen-induced histamine release from human basophils. Clin Exp Immunol 1997; 110 : 241-249.

29. Patterson R, Greenberger PA, Radin RC, et al. Allergic bronchopulmonary aspergillosis: Staging as an aid to management. Ann Intern Med 1982; 96 : 286-291.

30. Greenberger PA, Patterson R. Diagnosis and management of allergic bronchopulmonary aspergillosis. Ann Allergy 1986; 58 : 444-448.

31. Shah A, Bhagat R, Pant K, Jaggi OP, Khani ZU. Allergic bronchopulmonary aspergillosis with. aspergilloma: Exacerbation after prolonged remission. Indian J Tuberc 1993; 40 : 39-41.

32. Ramachandran S, Shah A, Pant K, Bhagat R, Jaggi OP. Allergic bronchopulmonary aspergillosis and Candida Albicans colonization of the respiratory tract in corticosterod dependent asthma. Asian Pacific J Allergy Immunol 1990; 8 : 123-126.

33. Wang JL Patterson R, Roverts M et al. The management of allergic bronchopulmonary aspergillosis. Am Rev Respir Dis 1979; 120 : 87-92.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

Drug Resistant Tuberculosis

Md. Anwar Hossain[1], Khan Mashrequl Alam[2], Shafiqul Ahsan[3]

[Chest & Heart Journal 2003; 27 (1) : 48-53]

Introduction :

Tuberculosis is an ancient disease. It caused one billion deaths in the last 200 years[1]. In Europe it was responsible for one in ten death in the last century. Despite the availability of effective chemotherapy it is still a major health problem in most countries of the world[2]. The worldwide magnitude of the modern tuberculosis is so great that in April 1993 the World Health Organization (WHO) declared tuberculosis to be a global emergency[3]. About one third of the world's population have been infected with *Mycobacterium tuberculosis*[4]. Tuberculosis is the biggest killer among adult in South Asia. Nearly three million cases of tuberculosis and one million deaths occur each year in this region. The situation is expected to worsen due to the emergence of multi-drug resistant tuberculosis and HIV TB co- infection unless effective action is taken now[5]. Inspite of low incidence of HIV infection the situation of tuberculosis in Bangladesh is not better than other parts of the world. Recent estimates, suggest that 2.3% of the population become infected every year and 300,000 progress to disease. As for example in 1996 a total of 63,000 cases of tuberculosis were registered by the National Tuberculosis Program (NTP), representing 21% of the estimated incidence[5].

Tuberculosis was on the verge of extinction from the western world due to effective introduction of streptomycin in 1947, para-aminosalicylic acid in 1949 and isoniazid in 1952[6], resulting in persistent decline of morbidity and mortality. Recent upward trend in the incidence of tuberculosis due to the out break of HIV and drug resistant tuberculosis[7].

The drug resistance in *M. tuberculosis* is acquired by genetic mutation not related to the exposure of drug. Inadequate chemotherapeutic regimen or patient noncompliance may lead to the unchecked growth of resistant tubercle bacilli and ultimately to a case of drug-resistant tuberculosis[7].

Primary drug resistance (PDR) is that detected in isolates from patient who have never received anti-tuberculosis drug in the past, or who have been treated for less than one month. Acquired drug resistance is that detected in isolates from patient with record of previous treatment for tuberculosis for one month or more (WHO, 1996 A). Multi-drug resistance(MDR) is defined as resistance to both isoniazid and rifampicin, with or without resistance to other agent[3].

Epidemiology of drug resistant tuberculosis:

Case of drug-resistant tuberculosis has been described since the introduction of effective antibiotic therapy. But it has recently received increased attention owing largely to the dramatic outbreak of multi-drug resistant tuberculosis in both immunocompetent and HIV 'infected population. A worldwide survey was performed by WHO/IUATLD global surveillance project between 1985 and 1994. Rates of primary resistance to Isoniazid (INH) ranges from 0% to16.9%, to Streptomycin (SM) 0.1%-23.5%, to Rifampin 0-3.0% and Ethambutol (EMB) 0-4.2%, multidrug resistant tuberculosis (MDR-TB) 0-10.8%[7]. Report of Drug resistant Tuberculosis of 35 countries from 1994 to 1997 revealed Primary Drug Resistance (PDR) to INH ranged from 1.5-31.7%, to Rifampicin 0-16.8%, to SM 0.3-28.0% to EMB 0 -9.9%. MDR-TB ranged from 0-14.4% and total Primary drug resistance ranged from 9.9-40.6%. There are seven hot zones like India, Russia, Latvia, Estonia, Dominican Republic, Argentina and Ivory coast where MDR-TB ranged from 4.0-14.4%, of which highest 14.4% was in Latvia and Lowest 4% in Russia[8]. Nation wide survey of drug Resistant tuberculosis in the United states in 1991 showed total PDR was 13.4%, MDR-TB was 3.2%, highest resistance was 8.2% against INH, lowest was 3.2% against EMB and resistance against Pyrazinamide (PZA) was 5%[9]. The rate of drug resistance remained low in countries of Europe and Oceania,

1. Associate Professor, Chittagong Medical College, Chittagong
2. Lecturer of Microbiology, Chittagong Medical College, Chittagong
3. Resident surgeon (Asst. Prof.) NIDCH. Dhaka

where tuberculosis programme have been well maintained. In Melbourne, Australia during 1994 and 1995 total drug resistance was 8%, MDR-TB was about 0.6% and resistance against INH, SM EMB and PZA were 6.1%, 0.6% 12.0%, 0.0% and 0.9% respectively[10]. In Turin, Italy MDR-TB was 3.7%, resistance against at least two drugs was 1.9%, and resistance to INH was 4.1%, to 1.5%, to SM 4.8% and EMB was 1.5%[11]. In Mali, Africa resistance to at least two drugs were 22.5%, MDR-TB was 1.1% and resistance against INH was 6.1%, RMP 1%, SM 7.1% and EMB was 3.1%[12]. In Beijing, China during 1978 to 1992 drug resistance against two drug was 4.1-10.0%, MDR-TB was 0.4-0% and highest resistance was 6% to INH and lowest was 0.08% to RMP[13]. In Saudi Arabia during the period of 1986 to 1988 total PDR was 21.66% and resistance to one drugs was 32.0%, two drugs were 52.9%, three drugs were 31.1% and resistant to all four drugs were 2:0%[14]. In Thailand total Primary drug resistance was 36.6% and resistance against one drug was 21.4%, two drugs 11.5%, three drugs 3.1%, four drugs 0.8% and MDR-TB was 3.8%[15]. In Pakistan Primary drug resistance against INH was 28%, SM was 9.4%, and no resistance was found against RMP and EMB[16]. In Colombo between 1989 and 1992, resistance to one drug was 10.6%, two drugs 2.9, three drugs 1.9%, MDR-TB 1.9% and total PDR was 15.5%[17]. In Nepal, resistance against INH was 5.52, SM was 4.83 and total PDR was 8%[18]. In Gujrat, India total PDR was 20%, resistance to INH, PMP, SM and EMB were 13.9%, 0.0%, 7.4%, 4.0% respectively during the period 1983 to 1986. During the period 1994-1997 combined primary and acquired drug resistance in India (Delhi region) to any drug was 32.4% and MDR-TB was 13.3%[19].

In Bangladesh, there were a number of studies, the results of which varied greatly. One study in the greater Mymansing district excluding main town showed primary resistance to INH was 5.36%, to 0.47%, to EMB 5.36%, to SM 0% and total resistance was 10.96%[20]. Another study at Shyamoly TB Clinic, Dhaka, showed total resistance was 27% and resistance to RMP was highest 19.79%, to INH 2.20% and resistance to SM and EMB was 0%[21]. Another study in IDCH Dhaka showed initial resistance to M. tuberculosis was 27.4% to INH 20.68% to 6.89% to SK 7.75% to EMB while MDR was 9.48% and total resistance was 49.13%[22] One study in BSMMU have shown total primary resistance was 29.70%. Resistance to RMP 10.9% to INH 15.8%, to SM 6.93%, to EMB 2.9% and to PZA 3.9%[23].

There were fewer studies on acquired drug resistance. Rates of acquired resistance to INH ranged from 4.0% to 53.7%. In South Africa the rate of acquired resistance to INH was 10.9%, where as the rate of primary resistance was 3.8%. In Korea, United States and Argentina the rates of acquired resistance vs. primary resistance were 41.9% vs. 12.6, 10.4% vs. 3.2% and 4.2% vs. 1.6% respectively. The rates acquired resistance to SM ranged from 0 to 19.4%. The rates of acquired resistance to RMP ranged from 0-24.5%, to EMB from 0-13.7%. The rate of MDR was low in most surveys of primary resistance ranging from 0 to 10.8%; however for acquired cases the rate of MDR ranged from 0 to 48.0% in Nepal; 33.8% in Gujrat, India; 30.1% in New York city and 24.5% in Korea[7]. Recently one study in BSMMU showed rates of acquired resistance to INH was 41.67%, to RMP35.41%, to EMB 13.54% to SM 14.59%, to PZA 10.42% and MDR was 22.93%[24].

Mechanism of drug resistance in M tuberculosis

The main cause of drug resistance is the failure to ensure correct treatment of each patient with tuberculosis. Programs are often at fault due to: a) Improper prescription of treatment regimens b) Inadequate drug supply c) Poor case holding, d) Poor quality of drugs e) Failure to ensure those patients follows the prescribed regimens[13,25,26].

Studies established beyond doubt that drug resistance in mycobacteria is due to the spontaneous occurrence of chromosomal mutations[27]. Such emergence of drug resistance represents the survival of random preexisting mutations, not a change caused by exposure to the medication. Plasmids or transposons have not been found to cause drug resistance in *M. tuberculosis*[28]. For example, mutations causing resistance to isoniazid occur in 1 in 10^6 organisms, to rifampicin in 1 in 10^8 organisms, to ethambutol in 1 in 10^6 organisms and to streptomycin in 1 in 10^5 organisms. The chance of resistance of one organism to any two drugs is the product of the individual probabilities of the drugs[29]. Development of resistance and failure of therapy have followed mono therapy with any one drug in

a few months. The use of two or three drugs should prevent development of resistance as bacilli developing resistance to one drug would be killed by the other drug or drugs.

The molecular mechanism of INH resistance in *M tuberculosis* is not well understood. In some cases resistance is associated with a loss of catalase and peroxidase activity. A single catalase gene, katG encodes a bifunctional enzyme with both catalase and peroxidase activities from M. tuberculosis. The current working model for understanding INH resistance due to KatG mutations is that catalase-peroxidase of *M. tuberculosis* is involved in the activation of INH, generating reactive radicals possibly attacking multiple targets in *M. tuberculosis*. A point mutations in a second gene, inh A gene has also been implicated in INH resistance. It is of interest that neither katG nor inhA gene mutations were found in 30% of the isolates, suggesting that alternative INH resistance mechanism exist.The mechanism of action of Rifampicin is believed to involved interference with transcription and RNA elongation by binding of the drug to the 0 subunit of RNA polymerase.Subtitution of a limited number of amino acid in the rpoB gene result in RMP resistance. Mutations in ribosomal protein S 12 (rpsl or str A) have been shown to confer streptomycin resistance. Resistance to SM is attributed to two classes of mutation, including point mutation in S12 ribosomal protein encoded by rps L gene and mutation in the rrs operon encoding the 16S rRNA[13.26].

The BACTEC method is automated radiometric method which detect radio labelled $C0_2$ as a measure of growth index. Other rapid methods are WIT, luciferase phase system, ESP culture sytem II and MB/BacT. PCR, Transcription mediated amplification (TMA) and Strand- (SDA) kits can be used[33].

All these rapid methods are highly expensive. Recently some colorimetric methods using Alamer blue and 3-(4,5-diethylthiazol-2y1)-2,5-diphenyltetrazolium bromide (MTT) showing encourageing result and cheaper[34].

Management of Drug Resistant Tuberculosis

The most effective method of dealing with drug resistant tuberculosis is to be prevent it by ensuring that drug susceptible tuberculosis is treated appropriately. Directly observed therapy, should be used to ensure that patient adhere to their medication. Drugs used to treat tuberculosis are classified as first-line and second-line agents. First line essential antituberculosis agents are the most effective and are necessary component of any short-course therapeutic regimen. The two drugs in this category are isoniazid and rifampicin. First-line supplemental agents either can shorten chemotherapy(e.g., Pyrazinamide) or are highly effective and infrequently toxic (ethambutol and streptomycin). Second line antituberculosis drugs are clinically much less effective than first-line agents and much more frequently elicit severe reaction..They include para-aminosalicylic acid (PAS), ethionamide, cycloserine, vancomycin, kanamycin, amikacin, thiacetazone,.rifabutin and the quinolones, especially ciprofloxacin, ofloxacin, and sparfloxacin.

Treatment of drug resistant tuberculosis remain one of the most difficult problem. The treatment is more expensive and less effective. Drug susceptibility test should be performed for proper treatment of drug resistant tuberculosis. WHO recomend following guideline for treatment of drug resistant tuberculosis. Apparent drug resistant tuberculosis cases who fail initial therapy should be treated by following regimen: 2SHRZE/1HRZE/5HRE. The majority of the patient cured with these regimens, if failed they need some second line drugs as follows[25].

Table-I

Acceptable regimen before or without susceptibility test results[25].

Initial phase		Contuation Phase	
Drug	Minimum Duration in month	Drugs	Duration in month
1. Aminoglycoside[a]	3	1. Ethionamide	18
2. Ethionamide	3		
3. Pyrazinamide	3	2. Ofloxacin	18
4. Ofloxacin	3		

[a] Kanamycin, or amikacin or capreomycin

Table-II

Acceptable regimens if there is resistance to isoniazid but susceptibility to rifampicin[25].

Resistance to	Initial phase		Continuation Phase	
	Drugs	Duration in month	Drugs	Duration in month
Isoniazid	Rifampicin	2-3	Rifampicin	6
	Aminoglycoside	2-3	Ethambutol	6
	Pyrazinamide	2-3		
	Ethambutol	2-3		
Isoniazid and Ethambutol	Rifampicin	3	Rifampicin	6
	Aminoglycoside	3	Ethionamide	6
	Pyrazinamide	3		
	Ethionamide	3		

Table-III

Acceptable regimens for the treatment of MDR Tuberculosis[25].

Resistance to	Initial phase		Contuation Phase	
	Drugs	Duration in month	Drugs	Duration in month
Isoniazid	Aminoglycoside	3	Ethionamide	18
Rifampicin	Ethionamide	3	Ofloxacin	18
and	Pyrazinamide	3	Ethambutol	18
Streptomycin	Ofloxacin	3		
	Ethambutol	3		
Isoniazid	Aminoglycoside	3	Ethionamide	18
Rifampicin	Ethionamide	3	Ofloxacin	18
Streptomycin	Pyrazinarnide	3	Cycloserine	18
and	Ofloxacin	3		
Ethambutol	C closerine	3		

[a]Kanamycin, or amikacin or capreomycin

Conclusion :

Drug resistant tuberculosis is highly prevalent in Bangladesh. Early diagnosis, proper effective therapy are mainstay of controlling drug resistant tuberculosis. Susceptibility test should be performed with all commonly used antitubercular drugs, then, appropriate drugs should be selected for treatment and to prevent spread of drug resistant tuberculosis. The national tuberculosis program regimen need to be assessed, evaluated and new strategy to be taken to control drug resistant tuberculosis.

References :

1. Ryan LW, Arathon E and Loverde VD. The epidemiologic pattern of Drug resistant Mycobacterium tuberculosis infection:A community based study. Am Rev Respir Dis 1989; 139 : 1282-1285.
2. Grange TM. Drug resistance and tuberculosis elimination. Bulletin of International Union Against Tuberculosis and Lung Disease 1990; 65: 57-59.
3. World Health Organization; TB death reach historic levels. Press release WHO/22, 21 Mar 1996: 1-3.
4. Kochi A. The global tuberculosis situation and the new control strategy of the world health organisation. Tubercle, 1991; 72 :1-8. 38
5. World Health Organisation. Review of the National tuberculosis programme of Bangladesh, 1997. WHO/TB/1998; 238: 1-48.

6. Onorato IM, Kent JH and Gastro KG. Epidemiology of tuberculosis. In Tuberculosis. Lutwick LI (ed). Chapman and Hall Medical. Ist (edn) 1995; 3 : 20-53.

7. Cohn DL, Bustroo F, and Ravislion MC, Drug resistant tuberculosis. Review of the worldwide situation and the WHOIIUATLD global surveillance project Clin Infect diseases, 1997; 24 (Suppl 1). S 121130.

8. World Health organisation. Surveillance of tuberculosis in the WHO European Region in 1995. Wkly Epi Rec., 1998 ; 73: 73-80.

9. Bloch AB, Coulthen GM, Onorato IM, Dunsbury KG, Kelly GD, Driver CR and Snider DE Jr, Nation wide survey of drug resistant tuberculosis in the united states. JAMA 1994; 271 : 9: 665-671.

10. David Dawson. Tuberculisis in Australia: bacteriologically confirmed cases and drug resistance, 1994 and 1995. Comm Dis Int. 1997; 18 : 245-49.

11. Giove S, Giorgis GE, Ardizzi A, et al. Attuale profilo epidemiologico defa farmacoresistaza del bacillo di koch ai chemionatibiotici antitubercolari, Minerva Med 1990 ; 81: 547-53. Cited from cited from Cohn DL, Bustreo F and Ravighon MC drug-Resistant tuberculosis : Review of the worldwide situation and the WHO/IUATLD Global Surveillance Project. Clin Infect Dis 1997; 24 (suppl 1) : S 121-30.

11. Giove S, Giorgis GE, Ardizzi A, et al: Attuale profilo epidemiologico della farmacoresistaza del bacillo di koch ai chemionatibiotici antitubercolari, Minerva Med 1990 ; 81: 547-53. Cited from cited from Cohn DL, Bustreo F and Raviglion MC drug Resistant tuberculosis : Review of the worldwide situation and the WHO/IUATLD Global Surveillance Project. Clin Infect Dis 1997; 24 (suppl 1) : S 121-30.

12. Githui WA, Kwamanga D, Chakaja JM, Karimi FG, Waiyaki PG. Antituberculosis initial drug resistance of Mycobacterium tuberculosis in kenya : a ten year review, East Afr Med J 1993; 70609-12. Cited from chon Dl, Bustreo F and Raviglion Mc. Drug resitant tuberculosis review of the world situation and the WHO/IUATLD Global surveillance project clin infect Dis, 1997; 24 (Suppl-1) s 121-30.

13. Zhang Y. Molecular basis in drug resistance in M. tuberculosis in M tuberculosis in Review article, Tuberculosis into next century, Hart CA, beeching NJ and Duerden BI, J. Med Microbial, 1995, 44:1-34.

14. Jarallah JS, Elias EK, al Hajjaj MS. Bukhari MS. al Shareef AHM. al Sharnmari SA. High rate of rifampicin resistance of Mycobacterium tuberculosis in the Taif region of Saudi Arabia. Tuberc Lung Dis 1992 ; 73: 113-5.

15. Tablos-Mendez A, Raviglion MC, Laszlo A, Binkin N, Reider H, Bustreo F, et al. Global surveillance for antituberculosis drug resistance, 1994-1997. N Engl J Med, 1998; 338: 1641-49.

16. Safi MI and Zai S. Primary drug resistance of Mycobacterium tuberculosis to antituberculosis drugs. JPMA Mar 1988: 73-74.

17. Perrera J, Wijekoon PNB, Gamage. Primary drug resistant tuberculosis in the central chest chinic, colombo Ceylon Med J 1996; clombo. ceylon Med J 1996; 44 : 51-54.

18. Cordel A and Schaap R. Antituberculosis drug resistance surveys in Mid-west region of Nepal. J Nep Med Assoc 1997; 36: 301-305.

19. Trivedi SS, Desai SG. Primary tuberculosis drug resistance and acquired rifampicin resistance in Gujrat, India. Tubercle 1988: 69: 37-42.

20. Van Duen A, Aung KJK Chowdhury S, Saha S, Pankaj A, Ashraf A, Rigouts L, Fissett C and Portaels F. Pattern of drug susceptibility of Mycobacterium tuberculosis in the Greater Mymenshmgh district of Bangladesh and its relevance to routine treatment schedules. Damien Foundation Bangladesh Dhaka, Bangladesh and Mycobacteriology unit; Institute of Tropical Medicine, Antwerp, Belgium 1994: 1-8.

21. Siddique MA and Rahman KM, Muazzam N, Hosain. Studies on M. tuberculosis : The primary drug resistance pattern. Bangladesh Med Res Counc. Bull 1995 ; 21 : 18-23.

22. Mostafa MG, Islam K, Zaman AMI.and Moslehuddin AKM. Drug.susceptibility in Mycobacterium ' tuberculosis and atypical

Mycobacteria of a sample of patients in IDCH, Dhaka, Bangladesh. Bangladesh J Medicine 1996; 7 : 37-39.

23 Miah MRA, Ali MS, Saleh AA, Sattar H. Primary Drug Resistance Pattern of Mycobacterium Tuberculosis in Dhaka, Bangladesh. Bangladesh Me Res. Counc. Bull. 2000; 26(2) : 33-40.

24. Alam KM. Studies on Acquired Drug Resitance Pattern on Mycobacterium Tuberculosis. M. Phil Thesis 2000.

25. World Health Organisation: Guidelines for the management of drug resistance in tuberculosis. WHO/TB/1996 210 (Rev-1).

26. Abe C. Molecular Mechanism of drug resistance in M. tuberculosis. Laboratory diagnosis of tuberculosis. Prospectus of precongress workshop. Maranetra N, Chairman, Siriraj Scientific congress. Tuberculosis- An analysis of 112 con. Cwt od Hat 1997; 2 : 38-39.

27. David HL. Drug resin in At tuberculosis and other Mycobacteria. Clin Chest Med 1980; 11 : 227-30. Cited in Treatment of multidrug resistant tuberculosis, Isman MD, the N Eng J Med, 1993; 329. 11 : 784-790.

28. Hart CA, Berg NJ and Duerden BI. Tuberculosis into next century. J Mod Mlaobiol 1996; 44 : 1-34.

29. Brudney K aid Dobin J. Resurgent tuberculosis in New York City. Human Immunodeficiency virus, homelessness and the decline of tuberculosis control programs. Am Rev Respir Dis 1991 ; 144: 745-9.

30. Kent PT and Kubica GP. Public health Mycobacteriology : A Guide for the level III laboratory. US department of health and human services, Public health service, Centre for Disease control, Atlanta, Georgia 30333. 1985 : 1-206.

31. Canetti G, Froman S, Grosset J et al. Mycobacterium : Laboratory Methods for testing drug sensitivity and resistance. Bulletin, world Health Organisation 1963; 29: 565-578:

32. Chuchottawor C. Drug susceptibility test for Mycobacteria. Laboratory Diagnosis of Tuberculosis. Prospectus of precongress workshop. Maranetra N, Chairman. Siriraj Scientific congress, Mahidul University, Thiland. 1996: 7-11.

33. Heifets LB. Drug susceptibility test in the management of chemotherapy of tuberculosis. CRC press, London 1991 : 89-121.

34. Yajko DM, Madeg JJ, Lancaster MV, Sander CA Cawthon VL, GeeB, Babst A and Handly W. Colorimetric Method for Determining MIC Of Antimicrobial Agent for Mycobacterium, tuberculosis. J Clin Microbiol 1995; 33 : 2324-2327.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

CASE REPORTS

Obstructive Airway Disease Plays a Prominent Role in Patients with Cardiac Disease

Mahbub Anwar[1], Shams Munwar[2], Mirza Mohammad Hiron[3]. AKM Mostafa Hussain[4] Abdullah-A-Mamun[5], Md. Abdul Qayyum[5], Md. Sayedul Islam[4]

Summary :
During the period January 2000 to December, 2001, this study was carried out in ZH Sikder Medical College to find out the profile of respiratory diseases in a cardiac center. A total of 6972 patients had reported to the cardiology out patient department. 1426 patients had some form of respiratory problem. 717 patient were referred to the Respiratory Medicine department Age range was 32-83, meanage was 54. It was seen from the study that 21% of patients reported to cardiac center had respiratory diseases. 11% of the refered patients had no cardiac problem at all. They were suffering from respiratory problem. Most of the patients were suffering from obstinacies illsa diseases. Every patient had remarkable improvement with proper treatment. A conclusion was that obsticle airway disease plays a prominent role in the morbidity in patients with cardiac disease. A proper referral and diseases does immerse help and deceit to such patients.

***Key Words** : COAD, Cardiac disease.*

[Chest & Heart Journal 2003; 27 (1) : 54-57]

Introduction :

Most of the signs and symptoms of respiratory and cardiac diseases are almost similar. Breathlessness, chest pain, cough, sputum production, orthopnoea crepitation and ronchii are common in both systems. No other any two systems have got so much similarities in presentation. It is often becomes difficult to diagnose and manage such cases. So many cardiac patients initially report to chest physicians and many pulmonary patients initially report to cardiologist. A remarkable number of patients has got both cardiac and respiratory problems with or without disease of other systems.

Cigarette smoking plays a vital role in the natural history of both coronary artery disease (CAD) and chronic obstructive pulmonary disease (COPD). Smoking exerts it's deleterious effects primarily on the cardiovascular and pulmonary systems. Nicotine is a direct adrenergic agonist that increases heart rate (HR), systemic vascular resistance (SVR) and blood pressure (BP)[1,2].

Smoking directly increases coronary vascular resistance, especially at sites of atheroselerotic plaque and stenoses[3]. Inhaled cigarette smoking also exerts a negative inotropic effect on the myocardium. Carbon monoxide has a binding affinity for the hemoglobin 250 times greater than that of Oxygen. In heavy smokers as much as 15% circulating hemoglobin may be bound to carbon monoxide reducing the Oxygen carrying capacity of blood The effect of smoking in the respiratory system are diverse. Smoking is known to disrupt mucociliary function and its ability to clear particles from peripherals airway before any abnormality in pulmonary function, is measured. This impairment in mucociliary clearance can be partially reversed by inhalation of B_2 agonist[4]. Smoking also alters pulmonary immune defense mechanism by depressing neutrophil chemotaxis decreasing immunoglobulins levels, reducing natural killer Lymphocytes activity, decreases macrophage adherence[5]. Risk of developing COPD in smoker has been estimated to be 9.7-30 times higher than in non-smokers in whom COPD is relatively uncommon [6,7]. A dose response relationship between cigarette smoking and the rate of pulmonary function decline[8]. Patients with,

1. Associate Professor of Medicine Z.H. Sikder Women's Medical College, Dhaka
2. Associate Professor of Cardiology, Z.H. Sikder Women's Medical College, Dhaka
3. Associate Professor of Medicine NIDCH, Dhaka
4. Asst. Professor, Respratomy Medicine, NIDCH, Dhaka
5. Reaistrar, Medical, NIDCH, Dhaka

COPD are at increased risk for post operative complication in CABG and other non-cardiac surgery, atelactasis, exacerbation of bronchitis, pneumonia and need for prolonged mechanical ventilation[9].

Materials and methods :

This retrospective study was carried out Z.H Sikder Medical College, Dhaka during the period January 2001 to December 2001. The aim of the study was to find out the profile of respiratory disease in a cardiac centre.

Methodology : During the said period 6972 patients had reported to the cardiology outpatient department of Z. H. Sikder Medical College. 1426 patients had some form of respiratory problems. 717 patients were referred to the Respiratory Medicine department. Age range was 32-83 mean age was 54 this is shown is table-I.

Thorough clinical examinations and an intensive investigation were performed in each patient where it was appropriate. These were like plane x-ray, CT scan of chest, blood count, sputum stains for bacteria, fungi, mycobacteria, sputum culture pulmonary function test (PFT), Bronchoscopy, pleural fluid analysis, pleural biopsy, Lymph node biopsy, pulmonary VQ scan.

With the above procedures a definite diagnosis could be reached. The disease those could be diagnosed are given in the table as follows.

After diagnosis a proper treatment was offered to each patient. Profound subjective and objective improvement was noted in every patient. A number of patients whose further intervention like coronary angiogram and CABG was postpond due to lung ailments could undergo such procedures and outcome was without any remarkable complication.

Result :

It was seen from the above observation that a lot of patients (21%) who reported to cardiac centre had respiratory disease. 156 (11%) of the referred patients had no cardiac problem at all. They were suffering from respiratory problem. Most of the patients were suffering from olive lung disease. COPD and Bronchial Asthma were the leading disease. Every patient had remarkable improvement with proper treatment.

Table-I

Incidence of Age in 717 patients is shown in the following table

Age in years Range	Total No. of Patient	Percentage (%)
31-40	36	5
41 - 50	171	23.8
51-60	198	27.6
61-70	218	30.4
Above 70	94	13.1

596 patients were smokers (Current & Ex. smoker) and 338 patients were non-smokers.

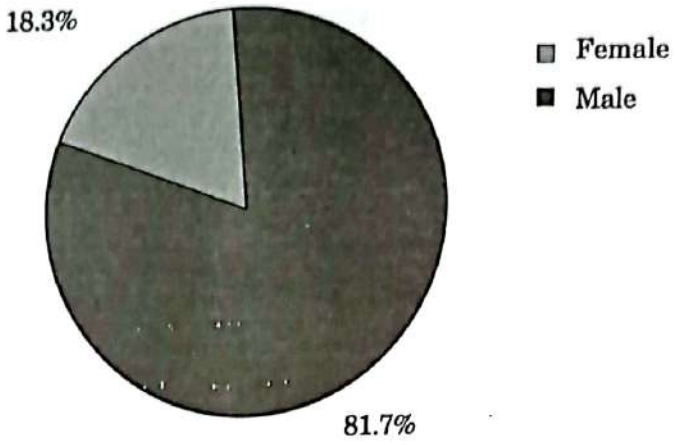
Smoking is shown in the following table –II.

Table-II

Smoking pattern in 717 referred patients.

Smoking Status	No. of Patients	Percentage (%)
Current Smoker	168	23.4
Ex. Smoker	338	47
Non-Smoker	211	29.4

Number of Male patients was 516 and Female patient 131 MF = 3.9 :1



Pie chart showing male & female distribution.

cardiac status of the referred patients were noted. The disease and frequency of referred patients are as follows in table.

Table-III

Cardiac status of referred patients.

CAD (Coronary Artery Disarm)	Nos. of Patient	Percentage (%)
Post CABG	97	13.5
Post PTCA	102	14.2
CAD on Medical Management		
3 Vessel Disease	56	8
2 Vessel Disease	67	9
Single Vessel Disease	28	4
CAD Awaiting Coronary Angiogram		
Stable Anger	67	9
Old M.1	58	8
ETT +Ve	58	8
Post Pacemaker	13	2
Cardiac Arrhythmia under investigation		
Atrial Fibrillation	17	2.4
Ectopies	6	1
Post valve Replacement	6	1
Cough (No Cardiac disease identified	101	14
SOB (No Cardiac disease identified	51	7

Table-IV

Final Diagnosis of 717 referred patients.

Diagnosis	Numbers	Percentage (%)
COPD	309	43 %
Bronchial Asthma	188	26%
Tuberculosis	62	8.6%
Pneumonia	58	8%
Sinusitis	28	4%
interstitial Lung Disease (IL)	16	2.2%
Bronchogenic Carcinoma	6	7%
Carvedilol Induced Cough	13	2%
Hypothyroidism	5	7%
Hyperthyroidism	4	7%
Psychogenic Dyspnoea	8	1 %

Conclusion :

A lack of proper referral and diagnosis was noted in most of the patients before reporting to cardiac centre of Z. H. Sikder Women's Medical College. Most of the patients came of their own intention. Referral rate was very poor. A conclusion was that obstructive airway disease plays a tent role in the morbidity in patients with cardiac disease. A proper referral and diagnosis does immense help and benefit to such patients. .

References :

1. Aronow WS, cassidy J, vangrow JS, et al; Effect of cigarette smoking and breathing carbon monoxide on cardiovascular hemodynamics in angina patients. Circulation 1974; 50 : 340 – 347.
2. Turino GM : Effect of carbon monoxide o the cardiorespiratory system Carbon monoxide Toxicity Physiology and Biochemistry circulation on 1981; 63 : 253 A: - 259A.
3. Klein LW, Ambrose J. Pichard A et al. Acute coronary homodynamic response to cigarette smoking in patients with coronary artery disease. J Am Coll Cardio 1984; 3 : 879-886.
4. Foster WM Langenback EG, Bergofsky EH, dissociation in the mucocilliary function of central and peripheral airway of asymptomatic smoking. Am Rev Respir Dis 1895; 132 : 633-639.
5. Meleod R. Meleod D. Meleod EG et al. Alveolar Macrophage function and inflammatory stimuli in smokers with and without obstructive pulmonary disease, a prospective study, Chest 1979; 76 : 123 –129.
6. Fielding JE : Smoking health effects and control. N Engl. J. Mod 1985; 313 : 41,
7. Drew C : smokiong ceessation pulmonary perspectives 1993; 10 (2)1-3.
8. Fletcher C, Peto B, Tinker C, Spelzer FE; The natural history of runic bronchitis 8t emphysema; An eight year study of early chronic obstructive lung disease in working men in London Now York, Oxford University press 1976.
9. Stein M, Koota GM, Simon M, Frank LA. Pulmonary evaluation of surgical patio, JAMA 1962; 181: 765 – 770.

Chest & Heart Journal
Vol. 27, No.-1, January 2003

Atrial Myxoma : Case Report

Md. Roushon Ali[1], Tarek-Ul Gani Shahji[2], Syed Azizul Hoque[3], Abu Siddique[4]

Summary :

Primary cardiac tumour is very rare (<0.2%) and is very challenging to both physician and surgeon. Most of them are benign (75%) & intracavitary. Among the primary tumours, myxoma is very common (50%). Three of such patients were diagnosed in the department of Cardiology, Jahurul Islam Medical College Hospital, Bajitpur, and Kishoregonj from June 2000 to July 2001.

***Key words** : Atrial myxoma, very common*

[Chest & Heart Journal 2003; 27 (1) : 58-60]

Introduction :

Atrial myxoma was first diagnosed angiographically in 1952 and the first successful removal was performed in 1954[1]. The tumour is almost always single, pedunculated and arise from interatrial septum. They are usually gray-white in colour and soft gelatinous in consistency but may be solid and even calcified. Microscopically they are composed of stellate or globular myxoma (lepidic) cells embedded within abundant acid mucopolysaccharide ground substance and covered on the surface by endothelium[2]. Most of myxoma are situated in left atrium(75%), other sites are right atrium(18%), left ventricle(4%), and right ventricle(4%)[3]. Size of the myxomas are usually ranges from 1 to 8 cm[4]. Myxoma are more common in female in between 30 to 40 years of age. They are usually sporadic (90%) but may be familial (10%). Some patients with cardiac myxoma have a syndrome frequently called as "Syndrome myxoma" or Carney Syndrome consist of cardiac myxoma, spotty skin pigmentation and peripheral and endocrine neoplasms. Some patients have been said to have the NAME syndrome (nevi, atrial myxoma, myxoid neurofibroma, ephelides) or the LAMB syndrome (lentigines, atrial myxoma, and blue nevi) [5]. A myxoma is neoplastic rather than a thrombotic origin is supported by the ultrastructural characteristics of the tumour, the results of biochemical analysis, the cultural properties of the tumour cell, and DNA analysis of the tumour[6].

Case-1 :

A 45 years old man attended in outpatient department of medicine with the complaints of exertional dyspnoea with palpitation along with history of recurrent attack of dizziness and light headedness for 3 months. He was treated outside with bronchodilators and other medicine but not improved, rather his symptoms deteriorates. On examination, the patient was dyspnic with tachycardia but in sinus rhythm and his blood pressure was low.

But his 1st heart sound was loud & 2nd sound was accentuated. There was a diastolic thrill in the apex & a mid diastolic localized murmur were noted in the apex. His lungs were clear. Clinically he was diagnosed as a case of mitral stenosis. An ECG, chest X-ray & echocardiogram was performed. ECG and X-ray finding were nonspecific but 2-D echocardiography showed an echogenic mass in the left atrium which prolapsed into the mitral valves during ventricular diastole but the initial valves were normal. Then the case was diagnosed as atrial myxoma. He was treated symptomatically and advised for immediate surgical resection of the tumour.

Case- 2 :

A 37 years old lady was admitted in female medical ward with the complains of fever, malaise & anorexia along with the history of recurrent dry cough and shortness of breath. After clinical

1. Associate Professor of Cardiology, Jahurul Islam Medical College Hospital, Bajitpur, Kishoregonj
2. Medical Officer, Jahurul Islam Medical College Hospital, Bajitpur, Kishoregonj
3. Associate Professor of Cardiology, NICVD, Dhaka
4. Associate Professor of Cardiology, BSMMU, Dhaka

examination and investigations the case also diagnosed as left atrial myxoma and was referred to NICVD, Dhaka for surgery.

Case- 3 :

A 40 years old man was also admitted in the hospital with short history of sudden retrosternal chest discomfort, shortness of breath, irritating dry cough especially during night. Initially we thought it as a case of ischaemic heart disease but after investigations the case was diagnosed as left atrial myxoma and also advised for surgery.

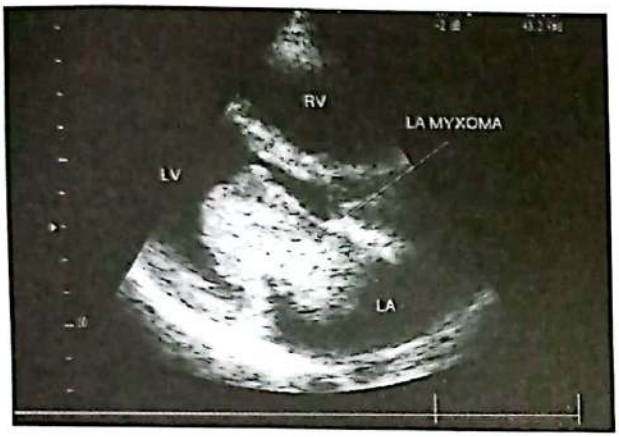


Fig-1 : *Atrial myxoma in the left atrium during ventricular systole (Apical four-chamber view).*

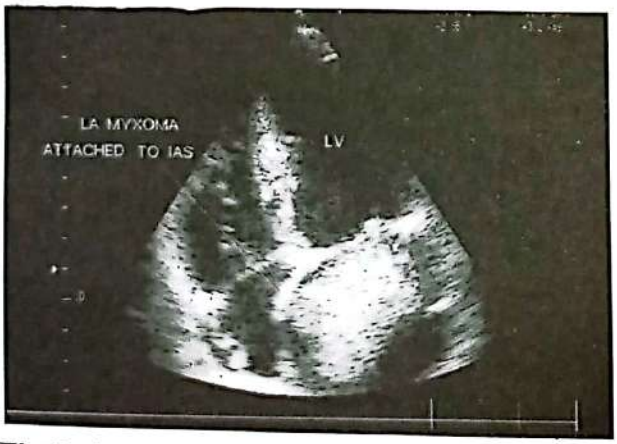


Fig-2 : *Atrial, myxoma in the left atrium projected in left ventricle during ventricular diastole (Apical four-chamber view)*

Discussion :

Although primary cardiac tumours are very rare but are not uncommon. In many cases it is misdiagnosed as bronchial asthma, mitral stenosis or pyrexia of unknown origin because very often history and clinical examination may be inconclusive. But a noninvasive 2-D echocardiogram can give conclusive diagnosis. Patient with atrial myxoma may remain asymptomatic but generally present with symptoms from a triad of manifestations - constitutional, embolic and obstructive. Systemic manifestation which noted in 90% cases - consist of fever, malaise, weight loss, anaemia, raised ESR, and elevated immunoglobulin level (usually IgG) and likely to be due to the tumor's constitutive synthesis and secretion of interlukin-6 (IL-6) .g In 50% cases - arterial emboli occur involving brain, kidney, heart, and extremities. Left atrial myxoma may obstruct either mitral valve or pulmonary vein producing pulmonary venous & arterial hypertension with secondary right heart failure. Symptoms include dyspnoea, orthopnoea, paroxysmal nocturnal dyspnoea, pulmonary oedema, haemoptysis, dizziness & syncope; occasionally sudden death. Changes of position may also produce symptoms.

On examination of left atrial myxoma - a loud 1st sound & accentuated 2nd sound, followed by an early diastolic sound may be heard. This sound the "tumour plop", is produced by the prolapse of the tumour through the mitral valve. An apical diastolic or systolic murmur or both is usually present. The ECG and X-ray findings may be normal or like that of mitral stenosis but sinus rhythm is usual. The 2-D echocardiogram is diagnostic & demonstrate its location, origin and movement of the intra-cardiac mass. Because of the risk of tumour embolization ,cardiac catheterization & angigraphy are only indicated for diagnosis of concomitant cardiac or coronary diseases. Treatment of the atrial myxoma consists of prompt surgical resection of the tumour together with generous portion of the atrial septum from which it arises.

Conclusion :

Atrial Myxoma are often misdiagnosed as mitral stenosis clinically but can be confirmed by echocardiograph. It is to be treated surgically as early as possible after diagnosis.

References :

1. Boon NA, Fox KAA, Bloomfield P.. Diseases of the cardiovascular system. In: Davidson's principles and practice of medicine, 18th ed.

Haslett C, Chilvers ER, Hunter JAA, Boon NA (eds). Churchill Livingstone, London, 1999; pp.298-99.

2. Chitwood WR Jr. Clarence Crafoord and the first successful resection of a cardiac myxoma. Ann Thorac Surg 1992; 54:997-998.

3. Schoen FJ. The Heart. In: Robbins Pathologic Basis of Disease, Cotran RS, Kumar V, Collins T (eds). 6th edn. WB Company, Philadelphia, 1999; pp-543-99.

4. Hall RJ, Cooley DA, McAllister HA Jr, Frazier OH. Neoplastic heart disease. In: The Heart Alexander RW, Schlant RC, Fuster V, O'Rouseke RA, Roberts R (eds). vol. 1, 9th ed. MacGraw-Hill Book, Inc., New York, 1998; 1 : 2295-2318.

5. Systemic Disorders and the Heart. In: Julian Cardiology. DG, Cowan JC, Mclenachan JM (eds). 7th ed. London: WB Saunders Company Ltd, London, 1998; 1988; 368-9.

6. Colucci WS, Schoen FJ, Braunwald E.. Primary Tumors of the Heart. in: Heart Disease. Braunwald E(ed). 5th edn. WB Saunders Company Ltd, Philadelphia, 1997; 464-77.

7. Dewald GW, Dahl R, Spurbeck JL, Carney JA, Gordon JH. Chromosomally abnormal clones and nonrandom telomeric translocation in cardiac myxoma. Mayo Clin Proc 1987; 62 : 558-567.

8. Seino Y, Ikeda U, and Shimada K. Increased expression of interleukin-6 mRNA in cardiac myxomas. Br. Heart J. 1993; 69 : 565,