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CASE REPORT

Endobronchial Intracavitary Fluconazole Irrigation for the Treatment of Pulmonary Mycetoma Complicating Fibrocystic Old Pulmonary Tuberculosis –A Case Report

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Abstract:

Pulmonary mycetomas often occur in fibrocystic old pulmonary tuberculosis. When this condition is complicated by hemoptysis or other overt symptoms definitive surgery is usually precluded because of poor lung function. Intracavitary antifungal therapy has been described for the treatment of symptomatic pulmonary mycetomas. We report the first use of intracavitary fluconazole in the management of a Aspergillus fumigatus *pulmonary mycetoma complicated by paroxysmal cough in a patient with fibrocystic old tuberculosis.*

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Introduction:

Pulmonary mycetoma formation in fibrocystic pulmonary tuberculosis is common[1] and may cause significant hemoptysis[2]. In addition to the more commonly reported *Aspergillus* species, *Pseudallescheria boydii* complex, of which *Pseudallescheria angusta* is a part[3], has been described as an etiologic agent of pulmonary mycetomas in these patients[4,5]. Treatment of this condition is problematic as surgery, the definitive therapy, is often precluded because of poor pulmonary function[6] Although previous reports have described intracavitary antifungal therapy in symptomatic pulmonary mycetoma[6], the use of intracavitary fluconazole, to our knowledge, has not been reported in the literature in Bangladesh We discuss a case with fibrocystic old tuberculosis complicated by pulmonary mycetomas presented with hemoptysis and intractable cough and dyspnea that was successfully treated with intracavitary fluconazole.

Case Report:

A 45 year-old Bangladeshi man with proven fibrocystic post pulmonary tuberculosis presented with blood tinged sputum with persistent cough, and dyspnea. He had no chest pain, fever, chills, or night sweats. He had a history smear positive *pulmonary tuberculosis* infection treated with anti TB drug CAT-I four years back

The patient was admitted to NIDCH in medical ward. His physical examination at admission was unremarkable. His hemoglobin 12.1 g/dl, a normal WBC, and normal coagulation parameters (INR 1.05, PTT 23.3 sec). Pulmonary function testing revealed moderate restriction with an FVC of 2.45 l (66% of predicted), FEV1 2.01 l (69% of predicted), and FEV1/FVC ratio 0.82. Chest CT demonstrated enlargement of the LUL cavities. Fibre optic Bronchoscopy was done, it shows a large irregular cavity containing a fairly large lobulated whitish movable ball which moved with suction and BAL was taken and send for fungal cultures which

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yielded an organism morphologically similar to aspergillus fumigatus. Microscopic morphology showed septate hyphae with simple, long conidiophores bearing single, unicellular, oval conidia that also darkened as the mold aged. *Aspergillus* serum precipitins and antigen were negative. Sixty milligrams of fluconazole diluted in 40 ml 0.9% NaCl was instilled via the working channel of Fibre optic Bronchoscope for every alternate day 3 sessions and a total of 200 mg fluconazole was installed for irrigation, after which hemoptysis and other symptoms significantly decreased. Mild cough occurred with instillation; however, he experienced no hallucinations during therapy.

At one month follow-up, he had only frequent episode of cough. He was followed up in OPD; CXR PA view shows marked improvement of cavity and shrinkage of the size of fungal ball.

Discussion: Aspergillus fumigatus species are fungal pathogens which can cause localized infection in immunocompetent patients, overwhelming sinopulmonary and disseminated disease among the immunocompromised[7]. Invasive pneumonia from *aspergillus* species can occur without structural lung disease in the immunosuppressed or with massive inoculation[7]. Pulmonary disease caused by aspergillus species include airway colonization, allergic bronchopulmonary hypersensitivity, and pulmonary mycetoma; the latter of which is thought to occur by colonization of devitalized lung resulting in a saprophytic state. We report the first case of pulmonary mycetoma

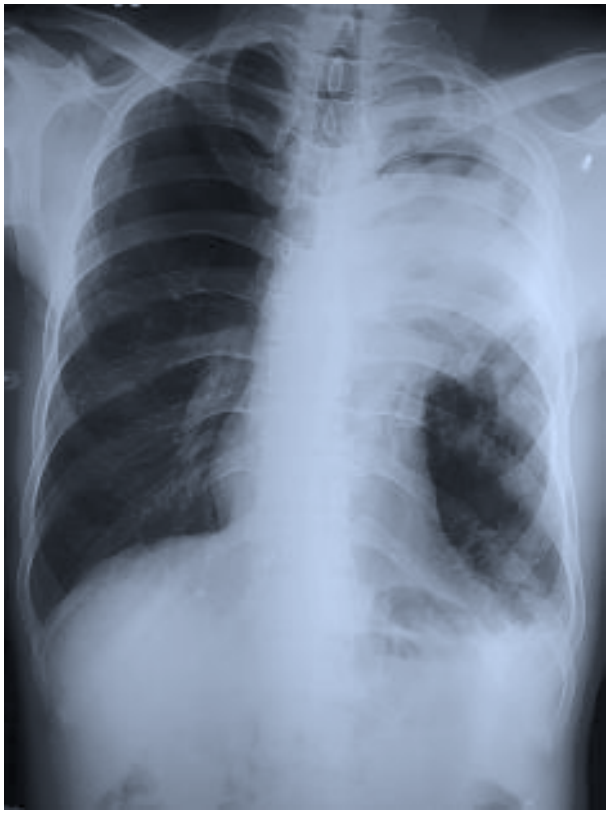

Fig.-1: *X-ray chest of patient.*

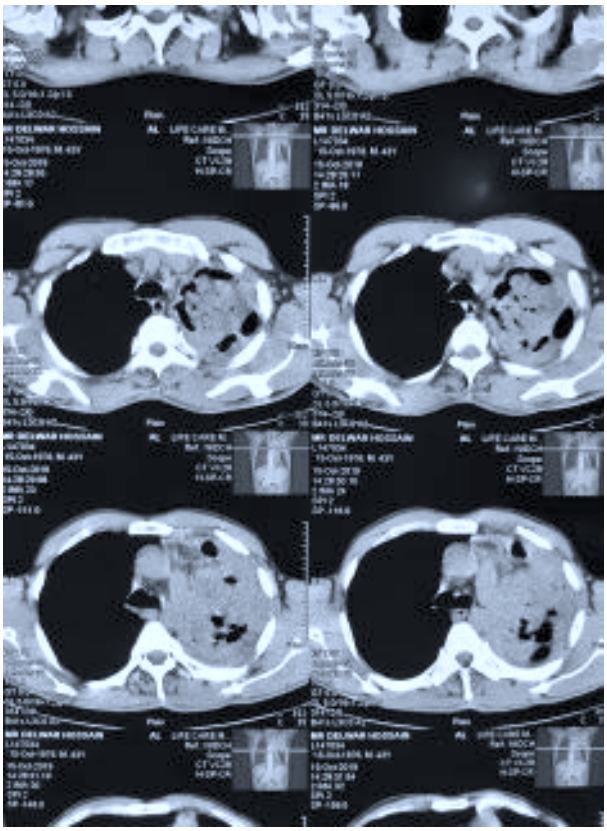

Fig.-2: *CT scan chest of patients*

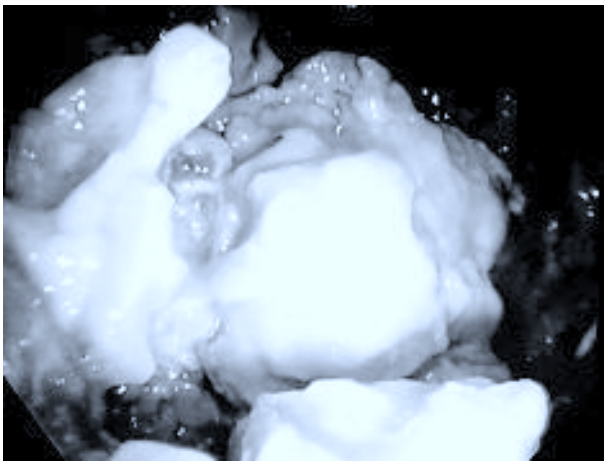

Fig.-3: *Bronchoscopic view of the lesion*

treated with intracavitary irrigation by antifungal drug, which responded well showing marked reduction of fungal ball size and improvement of symptoms.

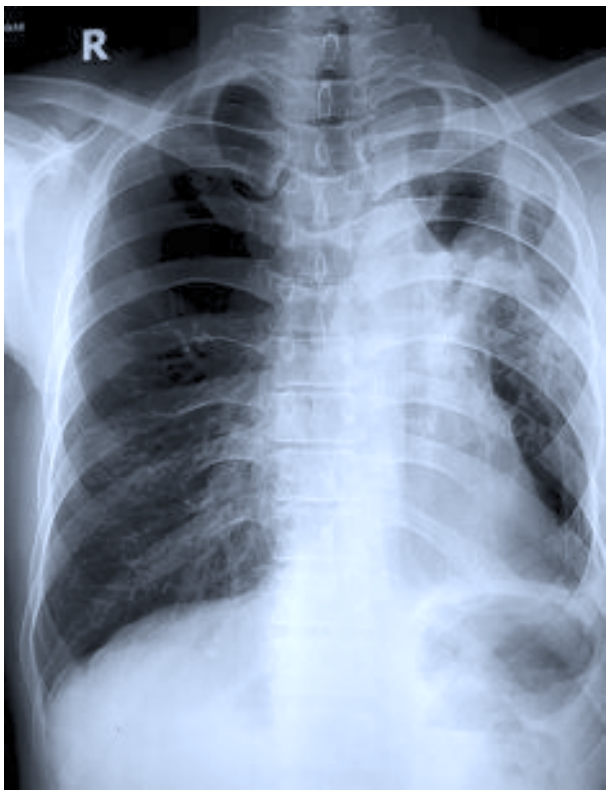

Fig.-4: *Chest x-ray PA view after treatment.*

Surgical excision is the accepted treatment of a symptomatic pulmonary mycetoma in patients with adequate pulmonary function and localized disease[8]. However, in many patients with fibrocystic tuberculosis, surgery is contraindicated as they frequently have poor pulmonary function[6]. Moreover, as compared to other populations with mycetomas and cavitary lung disease, the mortality of mycetomas in fibrocystic tuberculosis is worse. One review of 28 cases of pulmonary aspergilloma[9] demonstrated a substantially decreased one year survival in those with fibrocystic tuberculosis as compared to patients with cavitary lung disease from other cause.

Hemoptysis frequently complicates pulmonary mycetomas in fibrocystic tuberculosis[10]. When such hemoptysis is life-threatening, bronchial artery embolization (BAE) is recommended as a temporary procedure[11]. The sustained effects of BAE, however, are limited due to collateral vascularization, making future repeated embolization less efficacious. While systemic antifungal therapy has shown little or no benefit in the management of chronic symptoms[12], it is not effective in controlling acute hemorrhage. A number of case reports and series have shown success in using intracavitary fluconazole for the acute management of hemoptysis complicating pulmonary aspergilloma in patients for whom surgery was contraindicated or the patient refuses surgery[13-16].

Surgical resection could not be performed in our patient because of his poor pulmonary reserve and patient also refuses surgery. After identification of the fungus by seeing through FOB and from cultures of the mycetoma, intracavitary fluconazole was instilled following an adaptation of the protocol by Shapiro *et al.*[16]. We chose fluconazole as it, in comparison to other triazoles, has the highest reported *in vitro* activity against clinical aspergillosis[17] and has shown promise in treating clinical infection[18]. The concentration of fluconazole solution of approximately 1 mg/ml was similar to previously reported tolerable concentrations of fluconazole instilled via the intracavitary approach to treat pulmonary aspergillomas[16]. Although we never measured serum levels of Fluconazole after treatment, we postulated that local installation of fluconazole into the mycetoma cavity would be effective without raising serum concentrations to the level that would cause side-effects the patient experienced with prior systemic therapy.

At subsequent follow-up, his clinical improvement persisted with only infrequent episodes of cough which we speculate was secondary to a decreased fungal burden within the cavity. The lack of complete resolution of the mycetoma on repeated chest imaging was also not unexpected as these are comprised mostly of cellular debris rather than viable fungal organisms. One series showed persistence of aspergilloma following intracavitary amphotericin B in 28% patients[14]. Furthermore, other reports demonstrating mycetoma resolution following such therapy involved daily cavity irrigation[15] or low-pressure suction via the catheter[16], both of which were not performed in our patient.

In summary, we report the first case of mycetoma treated with the use of intracavitary fluconazole

in the treatment of symptomatic pulmonary mycetoma. In our experience, intracavitary antifungal therapy is useful for controlling and preventing the recurrence of hemoptysis and symptomatic improvement of patient. It is important to determine the specific fungal species involved in the pulmonary mycetoma formation, and its antifungal susceptibility, to provide appropriate intracavitary therapy for those patients who cannot undergo definitive surgery.

Reference:

1. Wollschlager C, Khan F. Aspergillomas complicating sarcoidosis: a current perspective, Chest. 1984;86:585-588.
2. Jewkes J, Kay PH, Paneth M, Citron KM. Pulmonary aspergilloma: analysis of prognosis in relation to haemoptysis and survey of treatment, Thorax. 1983;38:572-578.
3. Gilgado F, Cano J, Gené J, Guarro J. Molecular phylogeny of the Pseudallescheria boydii species complex: proposal of two new species, J Clin Microbiol. 2005;43:4930-4942.
4. Chaudhary BA, McAlexander D, el Gammal T, Speir WA. Multiple mycetomas due to Pseudallescheria boydii, South Med J. 1987; 80:653-654.
5. Belitsos NJ, Merz WG, Bowersox DW, Hutchins GM. Allescheria boydii mycetoma complicating pulmonary sarcoid, Johns Hopkins Med J. 1974;135:259-267.
6. Judson MA. Noninvasive Aspergillus pulmonary disease, Sem Respir Crit Care Med. 2004;25:203-219.
7. Panackal AA, Marr KA. Scedosporium/ Pseudallescheria infections, Sem Respir Crit Care Med. 2004;25:171-181.
8. Riscili BP, Wood KL. Noninvasive pulmonary Aspergillus infections, Clin Chest Medicine. 2009;30: 315-335.
9 Tomlinson JR, Sahn SA. Aspergilloma in sarcoid and tuberculosis, Chest. 1987; 92:505-508.
10 Israel HL, Lenchner GS, Atkinson GW. Sarcoidosis and aspergilloma. The role of surgery, Chest. 1982;82;430-432.
11 Walsh TJ, Anaissie EJ, Denning DW, et al. Treatment of aspergillosis: clinical practice guidelines of the Infectious Disease Society of America, Clin Infect Dis. 2008;46:327-360.
12 Campbell JH, Winter JH, Richardson MD, Shankland GS, Banham SW. Treatment of pulmonary aspergilloma with itraconazole, Thorax. 1991;46:839-841.
13. Krakówka P, Traczyk K, Walczak J, et al. Local treatment of aspergilloma of the lung with a paste containing nystatin or amphotericin B, Tubercle. 1970;51:184-191.
14. Giron J, Poey C, Fajadet P, et al. CT-guided percutaneous treatment of inoperable pulmonary aspergillomas: a study of 40 cases, Eur J Radiol. 1998;28:235-242.
15 Lee KS, Kim HT, Kim YH, Choe KO. Treatment of hemoptysis in patients with cavitary aspergilloma of the lung: value of percutaneous instillation of amphotericin B, AJR Am J Roentgenol. 1993;161:727-731.
16 Shapiro MJ, Albelda SM, Mayock RL, McLean GK. Severe hemoptysis associated with pulmonary aspergilloma. Percutaneous intracavitary treatment, Chest. 1988;94:1225-1231.
17 Meletiadis J, Meis JF, Mouton JW, et al. In vitro activities of new and conventional antifungal agents against clinical Scedosporium isolates, Antimicrob Agents Chemother. 2002;46:62-68.
18. Perfect JR, Marr KA, Walsh TJ, et al. Voriconazole treatment for less-common, emerging, or refractory fungal infections, Clin Infect Dis. 2003;36:1122-1131.