Disappearance of Pulmonary Cavity caused by Fungal Infection

Kengo Nishino, Yuika Sasatani, *Hiroaki Satoh

Division of Respiratory Medicine, Mito Medical Center, University of Tsukuba,
Mito-city, Japan

*Corresponding Author’s e-mail: hirosato@md.tsukuba.ac.jp

Introduction
The disappearance of cavities associated with pulmonary fungal infections is rare.¹ A 79-year-old man was admitted to our hospital complaining of cough and fever for the previous two weeks. The patient had no history of diabetes or tuberculosis. At admission, a blood analysis showed white blood cell count of 13600/μL, C-reactive protein of 12.37mg/dL, serum creatinine of 1.27 mg/dL, and blood glucose of 206mg/dL. Chest CT scan taken at admission showed consolidation in the left lung, but no cysts or cavities were observed (Figure 1-A). Cefepime was administered for 3 days but his symptoms worsened. Considering the antibacterial spectrum, cefepime was changed to micafungin (100mg/day). Aspergillus antigen test was negative, but plasma β-D-glucan was found to be 118pg/mL (normal: -20pg/mL). Although no pathogen grew
in the culture of lavage fluid, septate hyphae with branching at 45-degree angles were observed, suggestive of Aspergillus infection. Micafungin was changed to oral voriconazole (300 mg/day), and intravenous liposomal amphotericin B (150mg/day) was added and continued for 3 weeks. The cough and fever, and inflammatory indices, improved. However, the appearance of a cavity in the chest was found by CT taken 2 weeks after the initiation of antifungal treatment. In this scan, a spherical structure suspected to be a ‘fungus ball’ or blood clot was found in the cavity (Figure 1-B). Oral voriconazole was administered for 12 weeks, but the cavity remained unchanged (Figure 1-C). By 12 months, however, the cavity changed to linear shadow by CT (Figure 1-D), and at 18 months, was not observed by CT (Figure 1-E). Thirty-seven months after this infection, the subject is still well.

Comments

Pulmonary fungal infections are often refractory because they usually occur in compromised hosts. In patients with pulmonary mycosis, some develop cavities. Once formed, they often change to linear shadows or remains as cavities, but rarely disappear. Our elderly patient had impaired glucose tolerance. In addition, the patient proved to have left renal cancer one year after this infectious episode. It was unclear whether the impaired glucose tolerance and cancer-bearing status in this patient were associated with fungal infection. To the best of our knowledge, there was one report of a patient with pulmonary fungal infection who followed a similar course until the disappearance of a lung cavity. This was a 26-year-old man with pulmonary aspergillosis, who had bronchial asthma as the underlying disease. Since it was a pulmonary mycosis that developed in a compromised elderly patient, it was speculated
that the cavity would remain after treatment. The patient could be followed up for a long period of time, even after the inflammatory response had improved, and the disappearance of the cavity was unexpectedly confirmed. The cavities formed by fungal infections usually remain, and the residual cavities are often not followed for long periods of time after symptoms and the inflammatory response have improved. Rare reports of cavity disappearance may be related to this. Although the mechanism is unknown, cavities formed by fungal infection may disappear as observed in this patient.

Conflict of Interest
The authors declare that there are not conflicts of interest.

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None declared.

Ethics
This study conformed to the Ethical Guidelines for Clinical Studies issued by the Ministry of Health, Labor and Welfare of our country. Written comprehensive consent was obtained from patient. Reporting of this case report was approved by the Ethics Committee in our hospital.

Authors’ Contributions
KN, YS and HS collected the data. KN and NH prepared the manuscript. All authors approved the final version of the article.
References


Figure 1: Changes until the disappearance of the cavity in left lower lobe of the lung. Consolidation in left lung without no cysts or cavities in the left lung at admission (A), appearance of a cavity with a spherical structure suspected to be a 'fungus ball' or blood clot by CT taken 2 weeks after the initiation of antifungal treatment (B), cavity that remained unchanged in shape and size by CT taken after 12 weeks of administration of voriconazole (C), change from cavity to linear shadow by CT taken 12 months after the diagnosis (D), and disappearance of linear shadow by CT taken 18 months after the diagnosis (E).