Hong Kong College of Physicians
Case report for Interim Assessment
Specialty Board of Advanced Internal Medicine (AIM)

For AIM Training, case reports should be submitted in the prescribed format together with the application form for Interim Assessment at least EIGHT Weeks before the date of Interim Assessment

Name of candidate (print and sign): Choi Yan Wing
Hospital and Unit: PWH, Medical Specialty: AIM and Geriatrics
Name of supervisor (print and sign): Prof. Vincent Wong
Date(s) and place (hospital) of patient encounter: 6/2/2023, PWH
Date of report submission: 14/3/2023

Case report

Note: Failure to follow the prescribed format (including the number of words) results in a FAILURE mark (score between 0 and 4) for the Case Report.

Title: A case of post-tuberculosis recurrent haemoptysis

Case history:

A 68-year-old gentleman was an ex-smoker and a retired milk powder factory worker. He had known history of Type 2 diabetes and hypertension with optimal control. He also had history of pulmonary tuberculosis complicated with necrotizing pneumonia in 2021, for which he was given 1 year of anti-tuberculosis medication. During 2022 to 2023, patient sought medical help for recurrent haemoptysis twice and was given Augmentin and tranexamic acid each time. His repeated sputum acid fast bacilli (AFB) cultures were all negative. An early CT thorax was arranged for him. During clinic follow up in February 2023, he complained of worsening haemoptysis, coughing up one cup of fresh blood with clots per day despite taking regular oral tranexamic acid. He had worsening shortness of breath, with reduced exercise tolerance to one flight of stairs. He had no recent travelling. He had no night sweat, weight loss, fever or loss of appetite. On physical examination, his blood pressure was 147/71 mmHg, pulse was 67 per minute, SpO2 94% on room air and afebrile. There was no finger clubbing or palpable cervical lymph node. His chest exam showed reduced air entry in the right upper and middle zone with mild crepitations. The haemoglobin level was 11 g/dL, white blood cell and platelet were normal, INR was 1.09. Chest X ray showed right upper zone haziness similar to previous X rays. Sputum AFB and cytology were still all negative. In view of the worsening haemoptysis, the patient agreed for clinical admission for further workup.

After admission, the patient was started on empirical Augmentin and regular intravenous tranexamic acid with improvement in his haemoptysis. The Respiratory Team saw him and offered an elective bronchoscopy which showed no endobronchial lesion or bleeding site except a tiny blood clot at the left upper lobe bronchus. Samples were taken and sent for bacterial and fungal culture, AFB and cytology which were all normal. A

subsequent CT thorax showed that he had background emphysematous lung changes with right middle lobe collapse and fibrotic scarring in favour of post infective changes. There was also a cavitary lesion with air-crescent in the right lung apex suspicious of a mycetoma (Figure). Blood test for Aspergillosis antigen and 1,3-betaDglucan were positive. He was negative for HIV. Hence, he was diagnosed to have post treated tuberculosis chronic pulmonary aspergillosis, aspergilloma type. The Cardiothoracic Surgery Team suggested an early follow up to discuss the plan for right upper lobe lobectomy. Augmentin was also switched to oral voriconazole. He tolerated the drug well with no side effects except transient visual blurring that resolved within minutes after taking the medication. Tranexamic acid was slowly weaned down to on-demand use, and he had no further haemoptysis.

Discussion and literature review

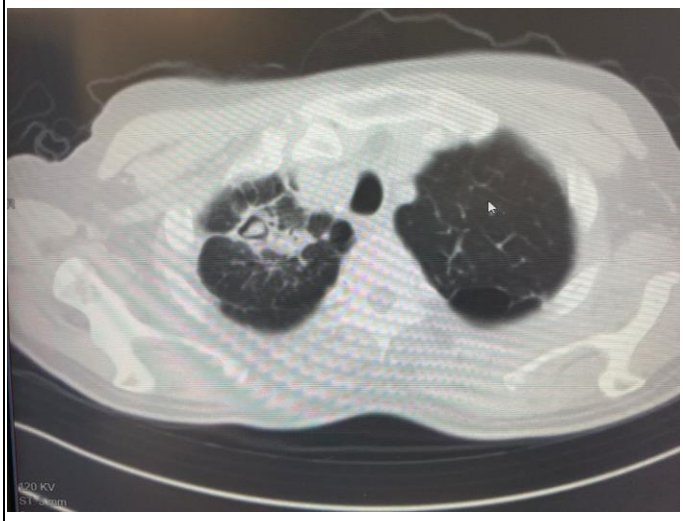
Haemoptysis is a commonly encountered complaint in our daily practice with a lot of possible differential diagnoses. As our patient had history of tuberculosis, some of the top differentials include bronchiectasis, tuberculosis reactivation, and post tuberculosis lung cancer. However, as he had worsening haemoptysis and shortness of breath, a CT was arranged which found a mycetoma that was later diagnosed to be an Aspergilloma. There are several terminologies that should not be mixed up. Aspergilloma is a ball of Aspergillus hyphae, tissue debris, inflammatory cells and mucins mixed together that form inside pre-existing lung cavities. While chronic pulmonary aspergillosis is an umbrella term used to describe different patterns of disease including a single aspergilloma which was what our patient suffered from, aspergillus nodules which are not as distinct as an aspergilloma, chronic cavitary pulmonary aspergillosis where cavities form and expand, and chronic fibrosing pulmonary aspergillosis which is the late stage of chronic cavitary pulmonary aspergillosis leading to destroyed lung. All of the above can be seen in immunocompetent individuals, and the term chronic is used when the disease lasts for more than 3 months. [1]

Chronic pulmonary aspergillosis is often seen in immunocompetent patients with pre-existing lung cavities through inhalation of environmental infectious spores. Aspergillus spores are often found on decaying plants and vegetations. Treated tuberculosis, which was what our patient had, is the leading cause of chronic pulmonary aspergillosis, accounting for around 15% of cases. [2] Other causes include nontuberculous mycobacterium infection, bullous emphysema, bronchiectasis, chronic obstructive pulmonary disease, prior pneumothorax, sarcoidosis, etc. In fact, up to 20-40% of patients who had treated tuberculosis would have residual cavitations in their lungs which made them suspectable to chronic pulmonary aspergillosis. Patients often present with haemoptysis due to ulceration of the inflamed mucosa of the cavity. [3] Other common symptoms include cough, fever, shortness of breath, malaise and weight loss, which are very similar to

tuberculosis. Therefore, it can be quite challenging to diagnose chronic pulmonary aspergillosis. Like our patient, it took him a few medical visits before the diagnosis was made. In his case, the finding of a mycetoma on CT helped to guide our diagnosis. Radiological finding of a round mass in a cavity partially surrounded by a radiolucent crescent that move within the cavity when patient changes from supine to a prone position (Monod Sign) is highly indicative of an aspergilloma, [4] whereas one or multiple cavities found particularly at the upper lobes of lungs are indicative of chronic cavitary pulmonary aspergillosis. However, the gold standard for diagnosis remains to be the serology testing for Aspergillus IgG. Another serology test for 1,3-betaDglucan may also be positive. [5] The treatment of chronic pulmonary aspergillosis depends on the type of disease. For a single aspergilloma with haemoptysis, surgical resection with adjunctive voriconazole or itraconazole are recommended. [6] If patients have cavitary or fibrosing types, voriconazole or itraconazole are recommended. However, if patients are severely ill, intravenous therapy with micafungin or amphotericin B are recommended.

In a prospective study done in Indonesia, 216 patients were followed up until the end of tuberculosis treatment. Aspergillus IgG was found to be positive in 30% of patients, and 13% went from negative to positive. [7] In this study, the likelihood of developing chronic pulmonary aspergillosis following treatment of tuberculosis appears to be much higher than what we see in our daily practice, considering that Hong Kong is also a city with high tuberculosis case load. Hence it will be useful to obtain some local data as most research on this disease was either from developing countries with high prevalence of tuberculosis such as India or developed countries with low prevalence of tuberculosis such as the United Kingdom, while Hong Kong is a developed city with high prevalence of tuberculosis. Whether it is merely underdiagnosed due to lack of awareness, or it is due to prompt tuberculosis treatment and good healthcare system in Hong Kong as compared to other developing countries, or that Hong Kong has fewer rural areas to contain decaying plants for aspergillus spores to grow is an interesting topic to be further studied. The take home message for this case is that treated tuberculosis is known to be strongly related to chronic pulmonary aspergillosis. Hence this diagnosis ought to be considered when we encounter patients with recurrent haemoptysis following treatment of tuberculosis.

Tables and figures (where applicable) (no more than two figures)



Reference (not more than 10)

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4. Sharma S, Dubey SK, Kumar N, Sundriyal D. 'Monod'and 'air crescent'sign in aspergilloma. Case Reports. 2013 Sep 13;2013:bcr2013200936.
5. Fujiuchi S, Fujita Y, Suzuki H, Doushita K, Kuroda H, Takahashi M, Yamazaki Y, Tsuji T, Fujikane T, Osanai S, Sasaki T. Evaluation of a quantitative serological assay for diagnosing chronic pulmonary aspergillosis. Journal of Clinical Microbiology. 2016 Jun;54(6):1496-9.
6. Denning DW, Cadranel J, Beigelman-Aubry C, Ader F, Chakrabarti A, Blot S, Ullmann AJ, Dimopoulos G, Lange C. Chronic pulmonary aspergillosis: rationale and clinical guidelines for diagnosis and management. European Respiratory Journal. 2016 Jan 1;47(1):45-68.
7. Setianingrum F, Rozaliyani A, Adawiyah R, Syam R, Tugiran M, Sari CY, Nandipinto F, Ramnath J, Arifin AR, Handayani D, Burhan E. A prospective longitudinal study of chronic pulmonary aspergillosis in pulmonary tuberculosis in Indonesia (APICAL). Thorax. 2022 Aug 1;77(8):821-8.

No of words in Case History and Discussion (excluding references):___1182_____ (should be between 1000-2000)

Declaration

I hereby declare that the case report submitted represents my own work and adheres to the prescribed format. I have been in clinical contact with the case selected. The case report has not been submitted to any assessment board or publication and it is NOT related to my second specialty(ies), if any. My consent is hereby given to the College to keep a copy of my case report, in written and/or electronic, at the College Secretariat and allow the public to have free access to the work for reference.

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(signature of Trainee)

Endorsed by Supervisor *

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(signature of Supervisor)

* Supervisors must go over the Case Report with the Trainees, advise Trainees whether further amendments are necessary, review the Originality/Similarity Report prepared by Trainees, adherence to the required format, sign on the report and remind Trainees on issues related to copyright and plagiarism.