



Case Report

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Tuberculous Mediastinitis with Mediastinal Abscess in an Immunocompetent Man Presented with Fever, Acute Dyspnoea, Chest Pain, Chest Wall Swelling, Acute Kidney Injury, Transaminitis and DIC: Rare Case Report

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Abstract

A 45-years-old immunocompetent man had abscess in right side of neck. It was complicated by mediastinitis and mediastinal abscess, acute kidney injury, transaminitis and DIC. CT neck and chest revealed features of mediastinitis and mediastinal abscess in continuation with right cervical lymphadenopathy and abscess. PCR for *Mycobacterium tuberculosis* was positive in pus drained from anterior mediastinum. We reported a rare manifestation of tuberculous mediastinitis and mediastinal abscess.

Keywords: Cervical lymphadenopathy, Mediastinitis, Mediastinal abscess, *Mycobacterium tuberculosis*

Introduction

Tuberculosis is one of the top killing diseases particularly in the developing countries. It is caused by *Mycobacterium tuberculosis*. Lungs are most commonly affected; lymph node involvement is less common. Clinical awareness on tuberculous infection is important if it involves rare site like extra-pulmonary lesion; furthermore, it makes diagnostic challenges if the clinical presentation is not typi

cal [1-3]. Among extra-pulmonary lesions, mediastinal tuberculosis is relatively rare [4].

Acute mediastinitis is one of the life-threatening situations requiring early diagnosis and treatment. Clinical manifestations are swelling of chest with tenderness, dyspnoea, cough and fever. Differentiation of cellulitis of chest wall from mediastinitis is not easy



if there is no facility for CT scan. Acute kidney injury, transaminitis and DIC are well documented complications in patients with sepsis; however, they are very rarely reported as presentation of tuberculosis [5,6]. Acute kidney injury and transaminitis were reported as side effects of anti-tubercular therapy [7,8].

Case Presentation

The patient was 45-years-old non-immunodeficient man; he developed one week history of fever and painful swelling on right side of the neck. He was previously healthy. The primary physician thought it was pyogenic abscess; and, he performed incision and

drainage. Local wound responded well to daily dressing and oral antibiotics, amoxicillin-clavulanic acid. One week later, he noticed swelling over left anterior chest wall. It was shortly followed by high fever, aching chest pain and dyspnoea. Therefore, he was sent to tertiary hospital. He was dyspnoeic; temperature was 103°F; respiratory rate was 24/minute; Sa O₂ was 94% with oxygen 2L/minute; pulse rate was 120/minute; blood pressure was 90/50mmHg; tinge of jaundice, feature of inflammation over anterior chest wall was noted. Urine output was 200cc/24hours. There were several areas of ecchymosis over left arm suggestive of Disseminated Intra-vascular Coagulation (DIC) (Figure 1).



Figure 1: A large bruise over left arm suggestive of DIC.

Chest radiograph showed slight widening of mediastinum. Blood for hemoglobin was 11.2gm%; total WBC count was 9.9 X10⁹ /L (Neutrophils 88.1%, Lymphocyte 9.5%, Monocyte 2.4%); platelet count was 36 X10⁹/L; ESR was 40mm per 1sthour; serum creatinine was 4.9mg/dl (0-1.3mg/dl); blood urea was 244.3mg/dl (10-50mg/dl); serum sodium was 132 ; potassium was 4.4; chloride was 98; total bilirubin was 15.6 mg/dl (0.2-1.0mg/dl); Aspartate aminotransferase was 65U/L (9-48U/L); LDH was 502U/L

(200-480U/L). Blood sugar (105.6mg%) and Hb A1 C were normal. Blood for retroviral serology was negative; serology for hepatitis B and C were negative. Computed tomography (CT) neck showed right cervical lymphadenopathy with some areas of break down suggestive of abscess. CT chest revealed features of mediastinitis and mediastinal abscess; they were in continuation with pre-tracheal fascia as seen in CT neck findings (Figures 2-12).



Figure 2: Mediastinal drainage tube.

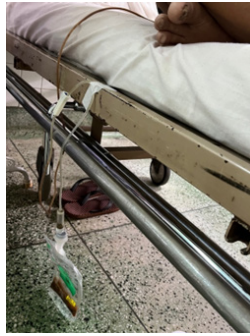


Figure 3: Brownish pus draining from mediastinal drainage tube.



Figure 4: Close up view of mediastinal drainage tube and bag.

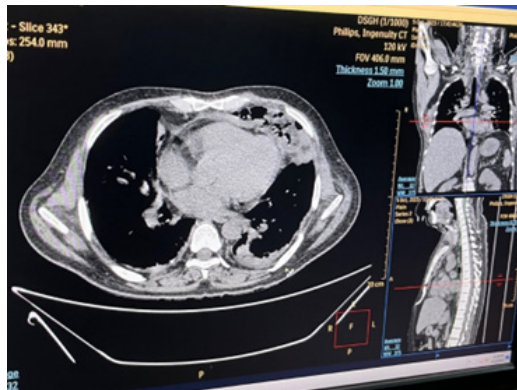


Figure 5: CT chest showing multiple abscess with surrounding opacities in the anterior mediastinum suggestive of mediastinitis and mediastinal abscess, and minimal left pleural effusion.

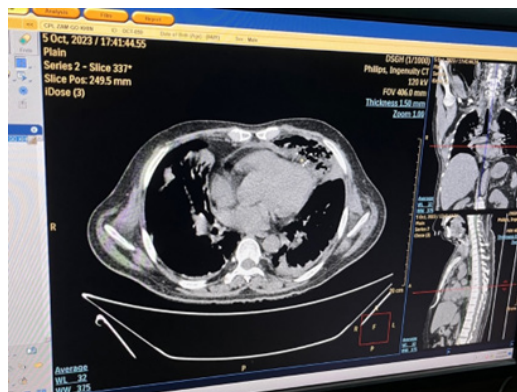


Figure 6: CT chest showing larger abscess in the anterior mediastinum with minimal left pleural effusion.

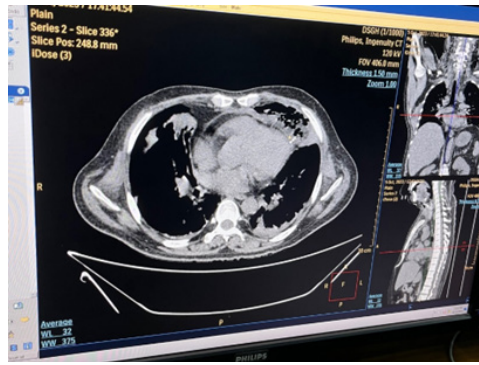


Figure 7: CT chest showing larger abscess with surrounding inflammation in the anterior mediastinum with minimal left pleural effusion.

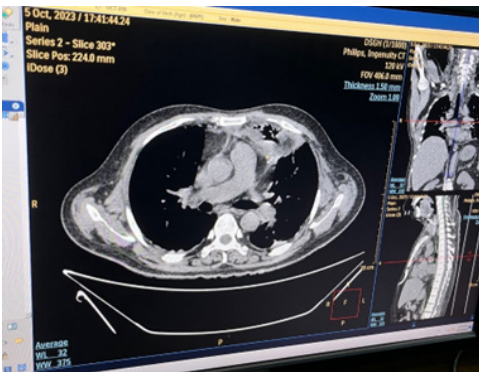


Figure 8: CT chest showing mediastinitis with abscess around aortic arch.

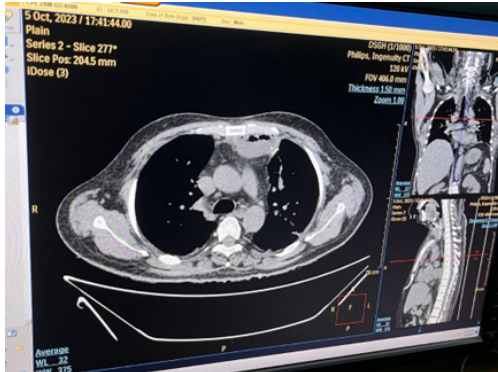


Figure 9: CT chest showing mediastinitis and rounded opacity with air speck at the level of trachea bifurcation.

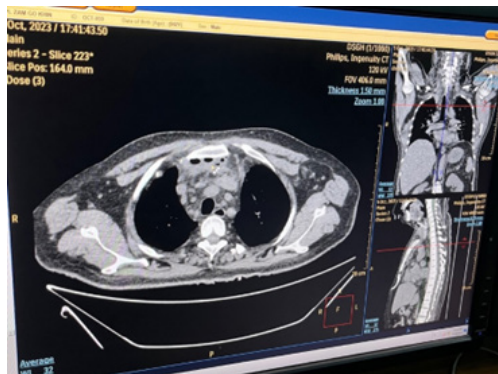


Figure 10: CT chest showing mediastinitis at the level of upper trachea.

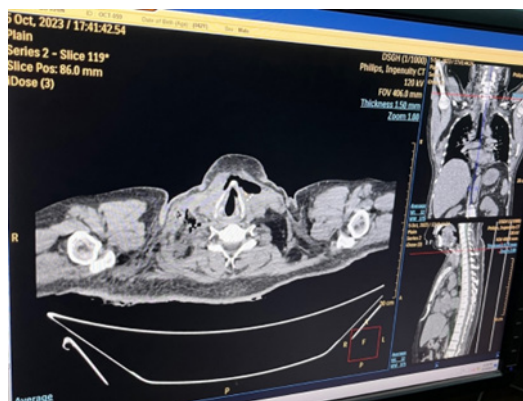


Figure 11: CT neck showing right cervical lymphadenopathy with air speck.

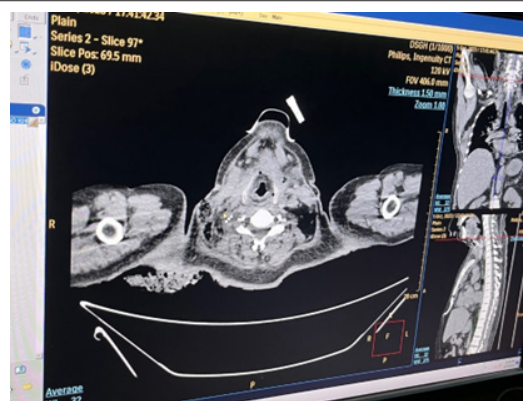


Figure 12: CT neck showing right cervical lymphadenopathy with air speck.

Therefore, it was percutaneously drained via CT guidance. Figure 3 Brownish pus 100 cc was drained. Figure 4 Thrombocytopenia was corrected with platelet rich plasma. Parenteral antibiotics (Meropenem and Levofloxacin) and fluid replacement were given; total 5 sessions of hemodialysis were done for acute kidney injury. And, the patient recovered gradually. Fever subsided; dyspnoea improved; urine output increased; serum creatine decreased gradually; platelet count became normal. Acid Fast Bacilli (AFB) in Ziehl-Nelson stain of pus drained from mediastinum was negative; however, PCR test for *Mycobacterium tuberculosis* was positive. Therefore, anti-tubercular therapy (isoniazid, rifampicin, ethambutol and pyrazinamide) was initiated.

Discussion

Mediastinal tuberculosis is a rare infection resulting from direct inoculation of organisms or through hematogenous spread. Mediastinal abscess due to tuberculosis was reported from rich countries as well as from poor countries [2]. Mediastinal tuberculosis may present as tumour [9]. In this case, the patient presented with swelling of chest with tenderness, dyspnoea, cough and fever suggestive of acute mediastinitis. Acute mediastinitis is one of the life-threatening situations requiring early diagnosis and treatment; the mortality rate is high (40%). Differentiation of cellulitis of chest

wall from mediastinitis is not easy if there is no facility for CT scan. It is one reasons for reporting this case.

Regarding the interval between the diagnosis of right cervical abscess and mediastinal abscess, it was 2 weeks in this case. The interval was 4 months in one case report; he was 62-year-old man presented with increasing mass in right mediastinum [10]. Infected lymph nodes may also transfer the bacilli through lymphatic route. In this case, the bacilli from infected right cervical node probably drained to anterior mediastinum through pre-tracheal fascia. Not only cervical tuberculosis but also mediastinal tuberculosis may resemble a pyogenic abscess or tumour [4]. Therefore, it is a clinical challenge for treating physician.

Mediastinal abscess may be complication of surgery or procedure [11,12]. History in this case highlighted the possible association or same etiology; neck abscess and mediastinal abscess. In view of clinical presentation, this patient had acute kidney injury, transaminitis and DIC on arrival to our hospital. Acute kidney injury may result from analgesics, dehydration, septicemia and antibiotics. It recovered with several sessions of hemodialysis, fluids and electrolytes therapy. Having DIC in this case can be explained by septicemia though it is uncommon in tuberculosis. They were very rare manifestation of mediastinal tuberculosis. This is another reason for case reporting.

In low resource setting, finding Acid Fast Bacilli (AFB) in Ziehl-Nelson stain done in sputum smear is not difficult and it is done routinely. In this patient, AFB was not seen in the pus drained from mediastinal abscess possibly owing to paucibacillary load; however, PCR test for *Mycobacterium tuberculosis* was detected. It supported the fact that PCR for *Mycobacterium tuberculosis* was a good tool for diagnosis of not only pulmonary tuberculosis Amin *et al.*, (2011) but also extrapulmonary tuberculosis [13-16]. In our country, PCR for *Mycobacterium tuberculosis* is not easily available in all areas. Therefore, clinical acumen, relative lymphopenia in full blood count and high ESR are good clues to the diagnosis of tuberculosis particularly extra-pulmonary tuberculosis. We would like to highlight the importance of lymphopenia in diagnosing tuberculosis in developing countries.

Conclusion

Clinical awareness on tuberculous infection is important particularly in high tuberculosis prevalence areas. Good clinical acumen and relative lymphopenia in full blood count strongly favor the diagnosis of tuberculosis. Mediastinal tuberculosis (mediastinal abscess and mediastinitis) is uncommon form of extrapulmonary tuberculosis. It should be considered in both immunocompetent and immunocompromised patients. PCR test for *Mycobacterium tuberculosis* is better than finding Acid Fast Bacilli (AFB) in Ziehl-Nelson stain particularly in specimen rather than sputum.

Ethical Approval

Our institution does not require ethical approval for reporting cases.

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Informed Consent

The informed consent for publication in this article was obtained from patient.

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Declaration Of Conflict of Interest

The authors declared no potential conflicts of interests with respect to authorship and publication of this article.

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