Case Report

Pulmonary tuberculosis presenting as diffuse alveolar hemorrhage: Believe it or not

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ABSTRACT

Diffuse alveolar hemorrhage (DAH) has been rarely reported with pulmonary infections and even rarer with pulmonary tuberculosis (PTB). We hereby report the case of a 31-year-old male, a known case of ankylosing spondylitis, who presented with clinical and radiological features consistent with DAH. Initial partial improvement with steroids was followed by a microbiological diagnosis of tuberculosis (TB). Starting of antituberculous treatment was followed by complete clinical improvement. This leads to a thought-provoking possible association between the two pathologies, DAH and PTB, if any.

KEY WORDS: Ankylosing spondylitis, diffuse alveolar hemorrhage, tuberculosis

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INTRODUCTION

Pulmonary tuberculosis is a commonly encountered entity in clinical practice, sometimes with varied presentations. This case was very unusual in its mode of presentation whereby work up of (Diffuse alveolar hemorrhage) DAH led finally to (Pulmonary tuberculosis) PTB as the underlying etiology.

CASE REPORT

A 31-year-old male, a known case of human leukocyte antigen B-27-positive ankylosing spondylitis (AS), presented with complaints of intermittent fever and generalized malaise for 3 months. Symptomatic treatment from a primary care physician was unhelpful, and he continued to further develop dyspnea and hemoptysis for the last 2 weeks before being referred to our center.

On admission, he was in respiratory distress with a respiratory rate of 38/min and required high flow oxygen (10 L/min) to maintain SpO_2 above 90%. He was conscious and oriented, but on examination bilateral extensive crepitations were present. He was febrile at the time of admission with a temperature of 102°F. Blood pressure was 102/62 mmHg and pulse rate was 130/min. His chest roentgenogram done outside before referral was a poor-quality film with diffuse bilateral nonhomogeneous infiltrates. A computed tomography (CT) thorax was done on the 1st day of admission, and he was shifted to the Intensive Care Unit in view of his clinical picture. He required support with high-flow nasal cannula for respiratory distress. His hemoglobin was 9.9 g%; total leukocyte count was 15,630; platelets were $2.07 \times 10;^5$ and erythrocyte sedimentation rate was 55 mm at the 1st h. His renal function tests including urine routine microscopy, serum electrolytes, and liver function tests were normal. Bedside echocardiography and ultrasound sonography test abdomen were unyielding. CT thorax revealed extensive bilateral ground glass opacities (GGOs) [Figure 1a]. In view of hemoptysis, radiological picture, anemia, and the clinical picture, a presumptive diagnosis of diffuse alveolar hemorrhage (DAH) was made, and he was started on intravenous methyl prednisone at a

Access this article online

Quick Response Code:

Website: www.lungindia.com

DOI: 10.4103/lungindia.lungindia_203_17

How to cite this article: Khurana AK, Jain S, Goyal A, Saigal S, Khurana U. Pulmonary tuberculosis presenting as diffuse alveolar hemorrhage: Believe it or not. Lung India 2018;35:508-10.

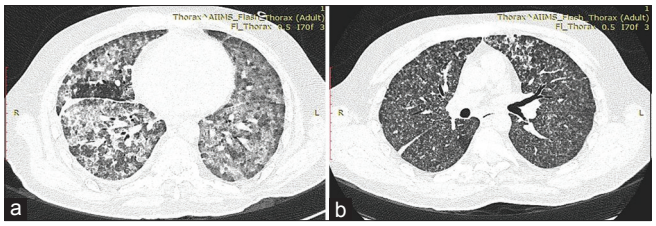

Figure 1: (a) High-resolution computed tomography thorax at the time of admission showing extensive bilateral ground glass opacities (b) High-resolution computed tomography thorax after 1 week of steroid treatment shows bilateral nodular opacities and tree in bud in the left lung parenchyma

dose of 125 mg once a day initially which was tapered to 40 mg OD after 3 days. Workup for vasculitis was done which included rheumatoid arthritis factor, antinuclear antibody (ANA), perinuclear antineutrophil cytoplasmic antibody (p-ANCA), cytoplasmic ANCA (c-ANCA), SS-A/SS-B, and anti-glomerular basement membrane (GBM) antibodies. All were negative except for a weakly positive c-ANCA.

He clinically improved significantly over the next few days. He was taken off high-flow nasal cannula and was maintaining 92% SpO_2 on room air. However, he continued to have spikes of fever. A repeat high-resolution CT thorax was done after 1 week which now showed a significant resolution of GGOs but diffuse nodular opacities and tree in bud opacities [Figure 1b]. Based on the CT report, a possibility of miliary tuberculosis (TB) was kept. As the patient was now clinically stable, a flexible bronchoscopy was done the next day and bronchoalveolar lavage (BAL) taken. The presence of a significant number of acid-fast bacilli (AFB) in BAL fluid (equivalent to 2+ Revised National Tuberculosis Control Programme smear grading) helped to make a diagnosis of TB [Figure 2] and anti-TB treatment (ATT) comprising of standard first-line drugs isoniazid, rifampicin, pyrazinamide, and ethambutol was started immediately. Furthermore, BAL cartridge-based nucleic acid amplification test was positive for *Mycobacterium tuberculosis* DNA with sensitivity to rifampicin. Over the next few days, his fever also subsided. At present, ATT is continued, steroids are being tapered, and the patient is doing well on follow-up.

DISCUSSION

DAH is a life-threatening medical emergency which presents with dyspnea, hemoptysis, anemia, and bilateral diffuse infiltrates. It has been often reported with autoimmune diseases or vasculitides and rarely after drugs or chemical exposure. It is not uncommon to find a positive report of ANCA or ANA or anti-GBM antibodies in such patients.[1] Among pulmonary infections, DAH has been reported after mycoplasma, legionella, or viral infections.[2] It has been rarely reported in association with pulmonary TB (PTB).[3] In this case, the diagnosis of DAH was relied on clinical (hemoptysis and anemia)

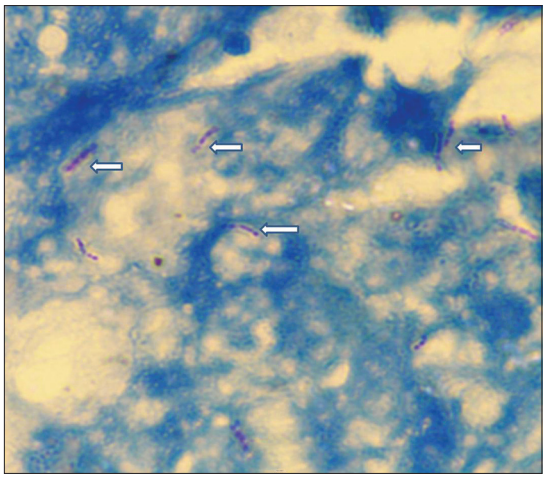

Figure 2: Photomicrograph of bronchoalveolar lavage sample shows multiple cylindrical beaded magenta colored bacterial profiles conforming to the morphology of *Mycobacterium tuberculosis*. The background shows inflammatory cells and alveolar macrophages (ZN stain ×1000)

and radiological findings (extensive GGOs). Similarly, the diagnosis of TB was made on AFB smear positivity on BAL and response to ATT. Usually, early bronchoscopy and BAL is helpful to make the diagnosis of DAH, but in this patient, bronchoscopy and BAL could be done only after the patient improved after initial treatment with steroids.

Autoantibodies, for example, ANA and ANCA, have been reported in TB patients previously in the literature as well.[4,5] These findings have always sparked interest whether *Mycobacterium* infection triggers the formation of these antibodies. One of the hypotheses is that the cell wall of the TB bacillus stimulates the release of oxygen metabolites from neutrophils. This leads to the release of lysosomal enzymes from the neutrophils and thereafter the development of autoantibodies against these granular components.[4] A study by Pradhan *et al*. reported ANA and ANCA positivity in 24% and 34% patients, respectively.[6] The presence of a weakly positive c-ANCA in this patient is intriguing, and a causal relationship could not be established. Whether the presence and prevalence of ANCA in TB warrants an underlying vasculitis or an unusual presentation of TB is not known. DAH in a patient of TB has been reported in a patient with anticardiolipin antibodies and also in a patient who underwent autologous stem cell transplant.[2,3] The etiology of DAH should always be classified as infectious or autoimmune because of different therapeutic implications. Here, we suspect if *Mycobacterium* infection and autoimmune disease are a different spectrum of the same disease entity. Interestingly, even AS has been reported to have a positivity of pANCA, ASCA, and Omp-C antibodies. The presence of p-ANCA in AS patients is more common in patients with concomitant ulcerative colitis and an indication to perform endoscopy.[7] Even from a perspective of AS, the presence of a weakly positive c-ANCA remains unanswered here, especially considering the fact that there was no worsening in symptoms of long-standing AS.

This case is hence reported here (a) to highlight the atypical presentation of TB in the form of DAH and (b) to sensitize the presence of autoantibodies in a patient of PTB.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Park MS. Diffuse alveolar hemorrhage. Tuberc Respir Dis (Seoul) 2013;74:151-62.
2. Marruchella A, Corpolongo A, Tommasi C, Lauria FN, Narciso P. A case of pulmonary tuberculosis presenting as diffuse alveolar haemorrhage: Is there a role for anticardiolipin antibodies? BMC Infect Dis 2010;10:33.
3. Keung YK, Nugent K, Jumper C, Cobos E. *Mycobacterium tuberculosis* infection masquerading as diffuse alveolar hemorrhage after autologous stem cell transplant. Bone Marrow Transplant 1999;23:737-8.
4. Ganesh R, Ramalingam V, Eswara Raja T, Vasanthi T. Antinuclear antibodies in *Mycobacterium tuberculosis* infection. Indian J Pediatr 2008;75:1188.
5. Texiera L, Mahr A, Jaureguy F, Noel LH, Nunes H, Lefort A, *et al*. Low seroprevalence and poor specificity of antineutrophilic and anticytoplasmic antibodies in tuberculosis. Rheumatology 2005;44:247-50.
6. Pradhan VD, Badakere SS, Ghosh K, Pawar AR. Spectrum of anti-neutrophil cytoplasmic antibodies in patients with pulmonary tuberculosis overlaps with that of Wegener's granulomatosis. Indian J Med Sci 2004;58:283-8.
7. de Vries M, van der Horst-Bruinsma I, van Hoogstraten I, van Bodegraven A, von Blomberg BM, Ratnawati H, *et al*. pANCA, ASCA, and OmpC antibodies in patients with ankylosing spondylitis without inflammatory bowel disease. J Rheumatol 2010;37:2340-4.