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Case Report

Anti-neutrophil cytoplasmic antibodies associated vasculitis with interstitial lung disease: a case report

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ABSTRACT

Anti-neutrophil cytoplasmic antibodies (ANCA) associated vasculitis is a necrotizing vasculitis that primarily affect small blood vessels of the airway and kidneys. The major clinicopathologic feature include microscopic polyangiitis and granulomatosis with polyangiitis. There are several studies done that have shown the association of interstitial lung disease (ILD) and ANCA vasculitis. Majority of the studies showed that the prognosis was bad in patients with AAV and ILD, then those without it, and patients with pulmonary fibrosis and ANCA had as low a prognosis as patients with IPF without ANCA. We hereby report a case of a female patient in her 70s who was been treated as a case of infection at different hospital, only to be diagnosed later as ANCA associated vasculitis with interstitial lung disease. Methylenetetrahydrofolate reductase (MTHFR) enzyme is one of the key enzymes involved in the metabolism of folate.

Keywords: ANCA, Vasculitis, Interstitial lung disease, AAV

INTRODUCTION

Anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitis is characterized by pauci-immune necrotizing vasculitis of the small blood vessels.[1] The relation between ANCA-associated vasculitis (AAV) and usual interstitial pneumonia (UIP) pattern of interstitial lung disease (ILD) is not clear.

The co-existence of AAV in a patient of ILD is rare and slowly been recognised. Patients having a preliminary diagnosis of pulmonary fibrosis can acquire seropositivity for myeloperoxidase (MPO)-ANCA, which may develop into microscopic polyangitis (MPA).[2] An increasing awareness of such clinical presentation among physicians is warranted as some patients may be under-diagnosed and may not show improvement.

CASE REPORT

72-year female, resident of Kolkata, known case of type 2 diabetes mellitus and hypothyroid presented with complaints of fever, headache, cough, shortness of breath on exertion, numbness of bilateral hands and feet and generalized weakness. For above mentioned complaints, detailed work up was done in Kolkata and investigations revealed anaemia (Hb 8.4), mild leucocytosis (11,400), blood culture - *Burkholderia cepacia* (positive from 2 sites), raised erythrocyte sedimentation rate (ESR) (105) and C-reactive protein (CRP) (54), Mantoux test – negative, Chest X-ray – bilateral lower zone opacities. She received multiple antibiotics, as per sensitivity report, and supportive treatment as inpatient.

She was on injection Meropenem 1 g IV tds for 7 days, when she came to us. But fever was persisting, low to moderate grade with respiratory symptoms. PET CT scan

whole body was done which showed FDG avid ill-defined peribronchial reticular opacity with ground glass changes noted in bilateral lung fields with predominant involvement of right lung lower lobe, few FDG avid peribronchial nodules in lower lobe and middle lobe of right lung and few FDG avid subcentimetric hilar and subcarinal lymphnodes. She was admitted with a provisional diagnosis of PUO, incompletely treated sepsis, Koch's, autoimmune, and malignancy. Bronchoscopy was done which was normal.

Autoimmune workup showed ANA (IF) negative, p-ANCA positive (444) and c-ANCA negative. EMG was suggestive of bilateral polyneuropathy. NCV showed–distal mildly asymmetrical large fibre, motor axonal polyneuropathy (bilateral lower limb > upper limb) and moderate degree of right carpal tunnel syndrome. Diagnosis of ANCA associated vasculitis was made. Patient was given pulse steroid therapy for 3 days. IV antibiotics were continued. Patient improved, fever subsided, cough and breathlessness settled. She was discharged on oral steroids and planned for cyclophosphamide versus rituximab therapy later on.

DISCUSSION

ANCA are auto-antibodies directed against antigens found in cytoplasmic granules of neutrophils and monocytes. The peculiar features present are pauci-immune necrotising vasculitis of the small blood vessels.[1] It comprises of, eosinophilic granulomatosis with polyangiitis (Churg–Strauss syndrome), granulomatosis with polyangiitis (Wegener's granulomatosis) and MPA. The association of lung involvement, ANCA and vasculitis in a patient is not clearly understood.

Few studies have tried to study the associations between ILD and ANCA. Arulkumaran et al learned that out of 510 patients treated for ANCA vasculitis, 38% percent carried a diagnosis of MPA and 62% had granulomatosis with polyangiitis or eosinophilic granulomatosis with polyangiitis. 2.7% had ILD, which occurred in patients with MPA only.[3]

A study by Nada et al showed that 3 patients who were been treated as idiopathic pulmonary fibrosis (IPF), were later diagnosed to have pulmonary renal vasculitis.[4] Many studies showed that it was warranted to keep vasculitis in mind in elderly patients having IPF.

Few studies also emphasized that the diagnosis of ILD with UIP often presented the onset of vasculitis, mainly MPA.[5] Our patient had features of ILD with UIP on HRCT which was before the clinical onset of AAV (MPA).

Kagiyama et al concluded that among 504 patients with IPF, 7.2% tested positive for ANCA (4% MPO and 3.2% proteinase-3 ANCA) at the time of first evaluation in the pulmonology clinic, in the absence of signs of vasculitis.[6] Half of the patients had serial ANCA measurements, 11% of whom later developed a positive ANCA (5.7% MPO, 5.3% proteinase-3 ANCA). A clinical diagnosis of MPA developed in 25% of those patients with a positive MPO-ANCA.

In a French retrospective study of 17 patients presenting with pulmonary fibrosis and a positive ANCA, HRCT analysis showed honeycombing, reticular intralobular opacities and traction bronchiectasis in all the patients with some degree of ground-glass attenuation (usually limited), whereas air-space consolidation was rare.[7]

There are multiple theories regarding the pathophysiology of ILD and AAV.[6] One of them is that alveolar haemorrhage because of pulmonary capillarity can cause pulmonary fibrosis. A study by Schanbel et al showed that alveolar bleeding was associated with AAV.[8] The other theory was, MPO-ANCA may play a direct role in the pathogenesis of pulmonary fibrosis.

Foucher et al reported patchy inflammatory cell infiltrates throughout the parenchyma of the lung in their MPO-induced rat model of AAV and suggested that the presence of an anti-MPO directed autoimmune response contributes to generalized pulmonary tissue injury.[9] It is also proposed that IPF may induce ANCA and AAV and that pulmonary fibrosis is clinically manifested at the time of diagnosis of AAV. Mostly, ANCA might be produced as a result of neutrophil destruction during the chronic inflammatory process.[10]

Majority of the studies showed that the prognosis was bad in patients with AAV and ILD, then those without it, and patients with pulmonary fibrosis and ANCA had as low a prognosis as patients with IPF without ANCA.[5]

CONCLUSION

It is warranted that all the practitioners are aware of the association of ILD in all patients with AAV, especially those with MPO-ANCA positivity. It is very important to keep in mind that, patients with ILD might ultimately develop features of systemic vasculitis. Currently, there is no specific treatment for patients with ILD and AAV/ANCA positivity and treatment is on the same lines as patients with AAV.

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REFERENCES

1. Jennette JC, Falk RJ, Bacon PA, Basu N, Cid MC, Ferrario F, et al. 2012 revised International Chapel Hill Consensus Conference Nomenclature of Vasculitides. Arthritis Rheum. 2013;65:1-11.
2. Ando M, Miyazaki E, Ishii T, Mukai Y, Yamasue M, Fujisaki H, et al. Incidence of myeloperoxidase anti-neutrophil cytoplasmic antibody positivity and

microscopic polyangitis in the course of idiopathic pulmonary fibrosis. Respir Med. 2013;107:608-15.
3. Arulkumaran N, Periselneris N, Gaskin G, Strickland N, Ind PW, Pusey CD, et al. Interstitial lung disease and ANCA-associated vasculitis: a retrospective observational cohort study. Rheumatology (Oxford). 2011;50(11):2035-43.
4. Nada AK, Torres VE, Ryu JH, Lie JT, Holley KE. Pulmonary fibrosis as an unusual clinical manifestation of a pulmonary-renal vasculitis in elderly patients. Mayo Clin Proc. 1990;65(6):847-56.
5. Katsumata Y, Kawaguchi Y, Yamanaka H. Interstitial Lung Disease with ANCA-associated Vasculitis. Clin Med Insights Circ Respir Pulm Med. 2015;9(1):51-6.
6. Kagiyama N, Takayanagi N, Kanauchi T, Ishiguro T, Yanagisawa T, Sugita Y. Antineutrophil cytoplasmic antibody-positive conversion and microscopic polyangiitis development in patients with idiopathic pulmonary fibrosis. BMJ Open Respir Res. 2015;2(1):e000058.
7. Foulon G, Delaval P, Valeyre D, Wallaert B, Debray MP, Brauner M, et al. ANCA-associated lung fibrosis: analysis of 17 patients. Respir Med. 2008;102(10):1392-8.
8. Schnabel A, Reuter M, Csernok E, Richter C, Gross WL. Subclinical alveolar bleeding in pulmonary vasculitides: correlation with indices of disease activity. Eur Respir J. 1999;14(1):118-24.
9. Foucher P, Heeringa P, Petersen AH, Huitema MG, Brouwer E, Tervaert JW, et al. Antimyeloperoxidase-associated lung disease. An experimental model. Am J Respir Crit Care Med. 1999;160(3):987-94.
10. Tzelepis GE, Kokosi M, Tzioufas A, Toya SP, Boki KA, Zormpala A, et al. Prevalence and outcome of pulmonary fibrosis in microscopic polyangiitis. Eur Respir J. 2010;36(1):116-21.

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