CASE REPORT

# TUBERCULOSIS VERSUS VASCULITIS

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Vasculitis (Wegeners Granulomatosis and Microscopic Polyangiitis) and Tuberculosis share many features including constitutional symptoms and respiratory tract involvement. The presence of kidney involvement with new onset azotaemia and active urine sediment support the diagnosis of vasculitis. We describe two cases that were diagnosed to be suffering from tuberculosis and placed on anti-tuberculosis therapy. On further workup they were found to be suffering from pauci-immune glomerulonephritis and recovered well with treatment.

**Keywords:** Tuberculosis, Microscopic polyangiitis, Wegener's granulomatosis, ANCA-associated vasculitis

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## INTRODUCTION

Tuberculosis (TB) is one of the diseases known to humans since long.[1,2] In Pakistan, like other developing countries, TB is widespread. In most cases, diagnosis of TB is made on clinical grounds and a large percentage of these are initiated on specific treatment without bacteriologic confirmation.[3] Small vessel vasculitis share many features of tuberculosis including constitutional symptoms, haemoptysis and radiologic findings of lung infiltrates and cavitations. Wegener's granulomatosis and microscopic polyangiitis are small vessel vasculitis that usually involves kidneys and lungs.

## CASE REPORT-1

Sixty five years old gentleman, known hypertensive and diabetic, presented with six weeks history of haemoptysis and generalized weakness. Physical examination revealed fine crepitations on chest auscultation. Chest radiograph showed bilateral reticular shadowing. His haemoglobin was 10gm/dl, total leukocyte count (TLC) 10,000/cmm, platelets 190,000/cmm, and erythrocyte sedimentation rate (ESR) of 85 mm fall at 1 hour, C-reactive protein (CRP) was 12 mg/dl and Mantoux test was negative. High resolution computerized tomography (HRCT) of chest showed nodular shadow in the right upper lobe. Bronchoscopy was performed which revealed marked inflammation with bronchial narrowing right upper lobe. Biopsy result was non-specific inflammation and bronchial washings showed fungal hyphae but were negative for acid fast bacilli (AFB). Patient was empirically started on anti-tuberculosis and antifungal medications.

Over the next few days his condition deteriorated with loss of appetite and weight. Three weeks after the initiation of treatment he developed massive haemoptysis and was hospitalized. Bronchoscopy was repeated which showed an irregular growth in right upper lobe, biopsy of this lesion could not be carried out due to falling oxygen saturation and bronchial washings were negative for malignant cells. ATT was stopped and repeated investigations revealed CRP of 12, LDH 1179 and urea 15.8 mmol/L, creatinine 205 umol/L, sodium 124 mmol/L and potassium 4 mmol/L. Due to azotemia Nephrology consultation was done. Patient was reviewed, urine was noted to have active sediment with 6–8 RBCs/High power field (HPF) and proteins +2, vasculitic screen as well as renal biopsy was done. C-ANCA was found to be strongly positive with 1:80 titres and renal biopsy revealed cellular cresents with fibrinoid necrosis and sparse deposits on immuno-fluorescence (Figure 1). GFR calculated from highest creatinine at presentation by Cockcroft Gault Equation was 32.6 ml/min. Diagnosis of Wegners granulomatosis was entertained in accordance with Chapel-Hill consensus conference (CPCC) criteria.[4] Disease activity of vasculitis was evaluated by Birmingham Vasculitis Assessment Score (BVAS) which was 19 and organ involvement assessed by disease extent index (DEI) which was 7.[5,6] Patient was initiated on pulse steroids and cyclophosphamide therapy. Over the next few days, his renal profile showed improving trend and at discharge had calculated GFR of 57.7 ml/min. At present he is on tapering dose of steroids with monthly injection cyclophosphamide.

## CASE REPORT-2

Fifty five years old female presented with 2 months history of intermittent febrile illness and weight loss of 8 kilograms. Systemic examination was unremarkable except temperature of 99.2$^{o}$F. Laboratory investigations revealed haemoglobin of 7.8 g/dl, TLC $12.7\times10^{9}$/L, ESR 42 mm fall at 1 hour and CRP 24mg. Serum Urea and Creatinine were within normal limits. Chest radiography showed reticular shadowing right upper lobe while Mantoux test/tuberculin skin test was negative. She was

initially treated by oral followed by broad spectrum intravenous antibiotics. As fever persisted with non-yielding urine and blood cultures, bone marrow biopsy as well as computed tomography of chest, abdomen and pelvis were done and were unremarkable. She was empirically placed on standard 4 drug anti-tuberculosis treatment. Four weeks later she continued to have fever and laboratory investigations showed 6–9 RBCs/HPF, 8–10 WBCs/HPF with a trace of proteins on urine microscopy. Serum urea 20 mmol/L, serum creatinine 607 umol/L, and Ultrasound showed increased echogenicity of kidneys with bilateral pleural effusion and pericardial effusion. She was initiated on haemodialysis.

As her condition continued to deteriorate, she was referred to tertiary care centre in Rawalpindi for seeking opinion of Nephrologists and management. At admission at AFIU, she had pallor with tachypnoea, BP 160/90 mm of Hg and temperature 100$^{o}$F, while systemic examination was remarkable for bilateral crepitations on chest auscultation, with pitting pedal oedema. Laboratory investigations revealed anaemia, severe azotaemia and calculated creatinine clearance was 8.5 ml/min. She was managed with urgent haemodialysis besides placement on steroids and azathioprine for suspicion of vasculitis. Diagnostic renal biopsy was done on next day of hospitalization. As she remained breathless she was intubated and placed on ventilatory support along with daily haemodialysis. Report of vasculitic screen showed p-ANCA positive while renal biopsy report was received on sixth day of hospitalization that was consistent with pauci immune glomerulonephritis. She was diagnosed to be suffering from Microscopic Polyangiitis as per CPCC criteria.[4] Her BVAS and DEI score were calculated to be 15 and 3 respectively.[5,6] She was initiated on pulse steroid along with cyclophosphamide and other supportive therapy. Over the next few days there was improvement in her condition with conversion to non-oliguria and was weaned off from the ventilatory support. She had a total of 14 sessions of haemodialysis and as her serum urea and creatinine showed declining trend, haemodialysis was stopped and double lumen catheter removed. She remained in the hospital for another 2 weeks and at discharge her serum creatinine was 130 umol/L, with a calculated creatinine clearance of 43.5 ml/min.

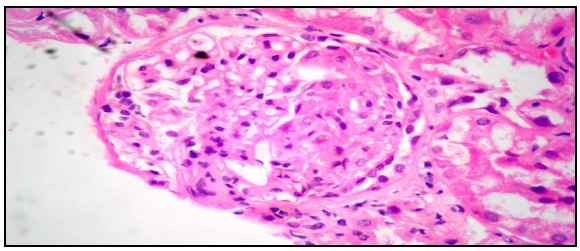

**Figure-1: Renal Histology with a crescent, of first patient**

## DISCUSSION

Vasculitis is defined as an inflammation of the blood-vessel wall and forms the pathological foundation of a diverse group of individual disease entities. Among the primary systemic vasculitic diseases, Wegener's granulomatosis and Microscopic polyangiitis share several features, including pulmonary capillaritis, necrotizing glomerulonephritis, and circulating anti-neutrophil cytoplasmic antibodies (ANCA). Because both diseases are highly associated with ANCA, they are sometimes collectively referred as ANCA-associated vasculitis.[7,8] Renal involvement is manifested by azotaemia and active urine sediment (red cells, red cell and other casts, and proteinuria).[9] Features relating to the lower respiratory tract include cough, haemoptysis, dyspnoea, and pleuritic chest pain. These symptoms may be accompanied by signs of pulmonary consolidation and pleural effusion. Signs and symptoms relating to upper airway include persistent rhinorrhoea, purulent or bloody nasal discharge, oral and nasal ulcers, sinus pain, hoarseness, stridor, earache, or hearing loss. Nonspecific complaints of fever, anorexia, weight loss, and malaise may accompany upper or lower airway disease. Signs and symptoms related to involvement of other organ systems include ocular inflammation, nasal congestion, joint tenderness and rash. The presence of any significant upper respiratory tract involvement is indicative more of Wegener's granulomatosis, compared to Microscopic polyangiitis.

The erythrocyte sedimentation rate is elevated in patients with vasculitis along with other acute phase reactants. Chest radiography may reveal nodules (which may cavitate), alveolar, pleural and diffuse hazy opacities. Treatment of ANCA associated vasculitis includes induction and maintenance phases.[9,10] Induction is carried out by cyclophosphamide-glucocorticoid combination therapy for first three to six months.[11,12] Once remission is induced, maintenance can be done by several regimens that can substitute Cyclophosphamide with less toxic Azathioprine or Methotrexate.[13,14]

Constitutional symptoms, upper and lower respiratory tract involvement and chest radiography of vasculitis can mimic tuberculosis. Tuberculosis being more common in our country should be considered a possibility in such presentation but sputum for bacteriology and biopsy of the affected organ can help in the diagnosis.

Both glomerulonephritis and tuberculosis are potentially fatal conditions and treatment delays can be life threatening. Vasculitis being less common is possibly often misdiagnosed as tuberculosis in

many cases as in our mentioned patients. In the presence of active urine sediment with deranged renal functions, vasculitis should be considered a strong possibility.

## CONCLUSION

Tuberculosis though much more common than vasculitis in our setup, should be diagnosed and treated early in the presence of objective evidence. Vasculitis shares many features of tuberculosis and should be considered in differential diagnosis, especially in presence of azotaemia. Clinician should have a high index of suspicion as treatment of these conditions is different, misdiagnosis and treatment delays are life threatening.

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