An Interesting complication of pulmonary tuberculosis

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Abstract:
Renal amyloidosis can occur as a primary or secondary, systemic or localized disorder. It is defined as a chronic infiltrative disorder characterized by impaired organ function caused by extracellular insoluble protein fibrils. We report a case of renal amyloidosis in a patient with pulmonary tuberculosis with bilateral bronchiectasis who presented with nephrotic syndrome. 35 yr old male, who was a known case of pulmonary tuberculosis, was admitted with complaints of shortness of breath and swelling of legs and face. On examination patient had bilateral pedal edema, pan digital clubbing, JVP was not elevated and vitals were stable. Auscultation of chestrevealed extensive crepitations and wheeze. Routine examination complete hemogram, renal function and liver function tests were within normal limits. Urine examination revealed 3 albuminuria. ECG normal. CXR right upper lobe fibrosis and left lung honey combing pattern. CT chest showed pulmonary tuberculosis with bilateral cystic changes and surrounding consolidation.

Echocardiogram was normal. Urine PCR 5.25. Hence we arrived at a diagnosis of nephrotic syndrome. We proceeded with renal biopsy which revealed amyloidosis. Immunofluorescent staining revealed AA amyloidosis. Hence it is a case of amyloidosis secondary to bilateral bronchiectasis and pulmonary tuberculosis. We would like to present this case as it made us look for secondary amyloidosis in patients with chronic infections and chronic inflammatory states.

Keyword: Pulmonary tuberculosis, Bronchiectasis, Amyloidosis.
CXR
35yr old male, Mr. Shankar was admitted with c/o shortness of breath for the past three months and swelling of the face and legs for past one month. Breathlessness was insidious in onset, progressive in nature and has progressed from class II to class IV dyspnoea over 3 months. Patient noticed swelling of face and legs for the past one month. It was initially noticed in the periorbital region which then progressed to involve the face and legs. The patient gives h/o cough with expectoration for past 1 month. The patient brings out copious sputum, which is mucopurulent in nature. It is not blood stained. On further questioning, patient gave h/o increased sputum production for past 2 years with frequent exacerbations. No h/o wheeze, fever or hemoptysis. No h/o chest pain, palpitations, or syncope. No h/o oliguria, hematuria or foamy urine. No h/o jaundice, hematemesis, melena or altered sensorium. The patient had a history of pulmonary tuberculosis – 3 years back for which he took ATT for 6 months and he was declared cured. Not a k/c/o DM, hypertension, coronary artery disease, COPD or seizures. Patient is a chronic smoker – 10 pack years. Occasional alcoholic. Patient is married, has two children and no h/o extramarital contact. On examination, patient - conscious, oriented, afebrile, B/L pitting pedal edema+, grade III pandigital clubbing +, mild pallor +, no cyanosis, no icterus or significant lymphadenopathy. Vitals – pulse rate 104/min, BP = 110/80 mmhg in Rt UL sitting position, RR=26/min, JVP – not elevated. CVS – S1s2 heard.P2 not loud, Respiratory system – NVBS heard, B/L coarse crepitations and wheeze +, p/a – soft, no organomegaly, no free fluids, CNS – NFND, no peripheral nerve thickening. Provisional diagnosis of pulmonary tuberculosis sequelae with B/L bronchiectasis with ?Cor pulmonale. The following investigations were done: CBC, RFT & LFT – Normal Urine r/e – 3+ proteinuria with no sugars and pus cells ECG – NSR, HR – 120/mt, WNL Echocardiogram – No RWMA, Normal lv function, RA & RV normal size and No pulmonary hypertension

CT Chest
CXR was taken which showed right upperlobe and lowerlobe fibrosis with left lung showing multiple ring shadows with fibrotic strands CT chest showed pulmonary tuberculosis with bilateral cystic changes and surrounding consolidation. In the mean time patient was treated with i.v. antibiotics, bronchodilators and inj. Furosemide. Patient symptomatically improved. As urine showed 3+ proteinuria, urine PCR was done and came as 5.25, confirming nephrotic proteinuria. Fasting lipid profile – normal. HIV – NR, HBsAg – negative and antiHCV – negative
Hence we proceeded with renal biopsy. 

**HPE of Renal Biopsy**

High power field showing a glomeruli with mesangial deposition of eosi

philic material (amyloid) and as well as amyloid deposition in the blood vessel wall. Congo red staining revealed apple-green birefringence under polarized light. Immunohistochemical staining – confirmed AA Amyloidosis. Final diagnosis – AA Amyloidosis secondary to bilateral bronchiectasis and pulmonary tuberculosis.

**DISCUSSION:**

Amyloidosis is the term for diseases caused by the extracellular deposition of insoluble polymeric protein fibrils in tissues and organs. These diseases are a subset of a growing group of disorders attributed to misfolding of proteins. Amyloid fibrils share a common beta-pleated sheet structural conformation that confers unique staining properties. Amyloid diseases are defined by the biochemical nature of the protein in the fibril deposits and are classified according to whether they are systemic or localized, acquired or inherited, and by their clinical patterns. The accepted nomenclature is AX, where A indicates amyloidosis and X represents the protein in the fibril.

AL is amyloid composed of immunoglobulin light chains (LCs), and has been called primary systemic amyloidosis; it arises from a clonal B cell disorder and may be associated with myeloma or lymphoma. AF groups the familial amyloidoses, most commonly due to mutations in transthyretin, the transport protein for thyroid hormone and retinol-binding protein. AA amyloid is composed of the acute-phase reactant serum amyloid A protein and occurs in the setting of chronic inflammatory or infectious diseases and has been termed secondary amyloidosis.

The histologic diagnosis of amyloid is based almost entirely on its staining characteristics. The most commonly used staining technique uses the dye Congo red, which under ordinary light imparts a pink or red color to amyloid deposits. Under polarized light the Congo red-stained amyloid shows so-called apple-green birefringence. This reaction is shared by all forms of amyloid and is caused by the crossed-pleated configuration of amyloid fibrils. Confirmation can be obtained by electron microscopy, which reveals amorphous nonoriented thin fibrils. AA, AL, and ATTR types of amyloid can also be distinguished by specific immunohistochemical staining.

Renal amyloidosis is diagnosed by demonstration of amyloid on renal biopsy. In contrast to primary amyloidosis, the apple-green birefringence is abolished in secondary amyloidosis if the specimen is treated with potassium permanganate before Congo red stain. Treatment current therapies in AL amyloidosis target the clonal bone marrow plasma cells using approaches employed for multiple myeloma.
Management of secondary amyloidosis involves treatment of underlying cause, as remission has been reported following treatment of the underlying disorder. Renal amyloidosis has a relatively poor prognosis with a median survival of 50 months. Most patients with renal amyloidosis secondary to pulmonary tuberculosis ultimately progress to chronic renal failure.

Few instances of apparent remission of amyloidosis have been published with improvement in the general condition and disappearance of the nephrotic syndrome. However, to the best of our knowledge, there has never been histological evidence of disappearance of amyloidosis.

References:

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