Renal amyloidosis and non-specific aorto-arteritis—a hitherto undescribed association

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Summary

Two patients presented with the nephrotic syndrome complicating non-specific aorto-arteritis (Takayasu's arteritis). Histologically both had renal amyloidosis. On investigation there was no evidence of chronic infection or any immuno-inflammatory disease known to be associated with amyloidosis. These cases raise the possibility of a significant association between aorto-arteritis of the Takayasu type and systemic amyloidosis.

KEY WORDS: Takayasu's disease, nephrotic syndrome, amyloidosis.

Introduction

The association of amyloid with aorto-arteritis was reported by Misra, Prakash and Agarwal (1959), although both their patients had intercurrent tuberculosis. However, in the present cases of aorto-arteritis we failed to find any other known cause of amyloidosis.

Case reports

Case 1

An 11-year-old boy was admitted in September 1980 with giddiness, bilateral leg oedema, puffy face and ascites of 3-week duration. The right radial and brachial pulses were feeble. A systolic bruit was audible over the right renal artery. Blood pressures were 158/95 and 86/60 mmHg in left and right arms, respectively.

On investigation, 24-hr proteinuria varied between 4.5 and 5.6 g. Total serum protein was 50 g/litre with albumin of 18 g/litre. His serum cholesterol was 9.84

mmol/litre and creatinine clearance (C_{cr}), 70 ml/min. Chest X-ray was normal, Mantoux test was weakly positive. Anti-streptolysin 'O' titre was <200 Todd units and 'C'-reactive protein was normal. Serological tests for syphilis (STS) were non-reactive. Erythrocyte sedimentation rate (ESR) was 62 mm on 1st hr. Serum electrophoresis did not reveal monoclonal gammopathy. Urine was negative for Bence Jones protein. Sputum and urine examination showed no *Mycobacterium tuberculosis* on smear. Barium studies of the gastrointestinal tract were normal. Renal biopsy showed extensive amyloid deposits replacing the glomerular architecture. The amyloid stained with potassium permanganate. Aortogram revealed irregularities of the abdominal aorta and stenosis of both renal arteries, the left being almost completely occluded (Fig. 1). Aortic archogram showed narrowing at the root of the right subclavian artery. He was treated empirically with anti-tuberculous drugs and prednisolone. Three months later, 24-hr proteinuria had decreased to 0.8 g. However, his blood pressure showed an elevation which improved after withdrawal of the prednisolone.

Case 2

A 22-year-old woman was admitted in February 1981, with a 6-month history of headache, and a 2-month history of leg oedema, oliguria and increasing weakness. She had facial puffiness and her radial and brachial arteries were impalpable on both sides. Blood pressure in the right lower limb was 170/100 mmHg.

She had proteinuria of 5.5 g/24 hr and reduced serum protein (total: 52 g/litre and albumin: 25 g/litre). Serological test for syphilis was non-reactive. Anti-streptolysin 'O' titre was <200 Todd units. The ESR was 45 mm in the 1st hr and C-reactive protein

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FIG. 1. Aortogram showing (arrowed) irregularities of abdominal aorta and stenosis of both renal arteries (Case 1).

was negative. Anti-nuclear factor and Rose-Waller tests were negative. Serum electrophoresis did not reveal monoclonal gammopathy. Urine was negative for Bence Jones protein. The creatinine clearance was 56 ml/min and the serum cholesterol 11.9 mmol/litre. Mantoux test was positive. However, chest X-ray was normal and repeated examinations of sputum and urine for acid-fast bacilli were non-contributory. Barium studies of the gastrointestinal tract revealed no abnormality. Aortogram (Fig. 2) revealed occlusion of the common carotid, subclavian arteries at origin and occlusion of innominate artery before the bifurcation. Renal biopsy revealed extensive deposition of amyloid material in the glomeruli which was sensitive to the potassium permanganate reaction.

She was empirically put on anti-tuberculous treatment and prednisolone along with other supportive care. Her oedema became much less. However, there was no significant improvement in proteinuria 7 weeks later and she did not report back for follow-up.

Discussion

Two cases of renal amyloidosis complicating non-specific aortoarteritis (Takayasu's arteritis) are presented. Histochemically the amyloid was potassium

FIG. 2. Aortic archogram showing (arrowed) occlusion of the common carotid, and the subclavian arteries on the left and occlusion of the innominate artery before the bifurcation on the right side (Case 2).

permanganate-sensitive in both cases (Wright *et al.*, 1977). This means deposition of AA protein found in secondary amyloidosis. Mild proteinuria is a not uncommon finding in aorto-arteritis. This is often interpreted as being due to ischaemic or hypertensive renal disease. As kidney biopsy is not generally advised in such cases unless the proteinuria is significant, it is not possible to exclude amyloidosis in all instances.

Reactive systemic amyloidosis (RSA) has been known to occur as a result of various acute recurrent or chronic infections, inflammatory, or neoplastic disorders. Rheumatoid arthritis is reported to be the most frequent predisposing disease in the western hemisphere (Hubsy, 1975) whereas tuberculosis is the commonest predisposing illness of RSA in India (Chugh *et al.*, 1981). Reactive systemic amyloidosis (RSA) has also been reported in ankylosing spondylitis, Reiter's syndrome, dermatomyositis, scleroderma, Behçet's syndrome, ulcerative colitis, Crohn's disease and, rarely, in systemic lupus erythematosus. More recently it is postulated that immunological stimuli act upon 'SSA' synthesizing cell to produce (amyloidogenic) SSA protein which undergoes proteolytic (lysosomal) cleavage to produce AA fibrils (Glenner, 1980).

Misra *et al.* (1959) observed amyloid in 2 cases of Takayasu's syndrome. However, both these cases had

intercurrent tuberculosis. In both the cases presented here, even after careful investigations we failed to find any evidence of tuberculosis, bronchiectasis, syphilis, rheumatoid arthritis or intestinal pathology. Absence of monoclonal gammopathy in serum and light chains in the urine ruled out the possibility of multiple myeloma. Some autopsy data (Sen *et al.*, 1973; Kinare, 1976) suggest an association between diseased segment of aortitis and local tuberculosis lymph nodes. Admittedly, lymphangiographic studies to delineate retroperitoneal and intrathoracic lymphadenopathy have not been done in our cases. However, there was no superficial lymphadenopathy in our cases which was recorded in the above-mentioned reports. Therefore, we are inclined to believe that there was no other primary disease, except the aorto-arteritis responsible for amyloidosis in the 2 patients reported here.

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