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Fibrillary comma-shaped electron-dense organized glomerular deposits associated with cryoglobulinaemia

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Case

A 51-year-old caucasian lady was hospitalized because of purpuric papules of the lower extremities, myalgias, arthralgias, haematuria and proteinuria. Her blood pressure and renal function were normal. She had a history of cerebrovascular accidents, and a previous nuclear magnetic resonance showed three ischaemic lesions. Laboratory work-up including liver function, hepatitis B surface antigen, hepatitis C antibody, immunoglobulins (Igs), antinuclear antibody, antineutrophil cytoplasmic antibody, rheumatoid factor, antistreptolysin O titre and antiphospholipid antibodies was normal or undetectable. No monoclonal immunoglobulins were detected on analysing blood protein electrophoresis. In contrast, C_3 was mildly diminished while C_4 was significantly diminished. Urinary protein excretion was 1.2 g daily without Bence–Jones proteinuria. Mixed cryoglobulins were detected only once (cryocrit 0.5%). She underwent a renal biopsy. Light microscopic examination showed membranoproliferative glomerulonephritis (MPGN) with lobular accentuation. Congo red staining was negative, and immunofluorescence microscopic studies demonstrated positive staining for IgG, IgM, IgA (at lower intensity than the other Igs) and C_3 in the mesangium and glomerular capillaries. Ultrastructural examination evidenced mesangial, subendothelial and subepithelial organized electron-dense deposits (Figures 1 and 2) characterized by curved fibrils with a diameter of 24 nm. The curvilinear patterns of fibrils look like commas disorderly infiltrating glomerular structures. Cryoglobulinaemia type III was diagnosed. Two months later a uterine malignant neoplasm was discovered.

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Discussion

The clinical picture was suggestive of cryoglobulinaemia although cryoglobulins were detected only once; in fact there is generally no relationship between the severity of vasculitic manifestations and serum levels of cryoglobulins or complements [1]. In our case the diagnosis was mainly based on 'Meltzer's triad' of palpable purpura, arthralgias and myalgias which is generally seen in essential, viral or connective tissue-associated cryoglobulinaemia. Moreover, a malignant tumour of the uterus was discovered a few months after the onset of renal disease; therefore, a link between the two conditions could be hypothesized. Glomerulopathies with organized deposits are much less frequent than those with usual-type immune-complex deposits and are typically described in amyloidosis, cryoglobulinaemic glomerulonephritis, fibrillary glomerulonephritis, immunotactoid glomerulopahty, collagenofibrotic glomerulopathy and fibronectin glomerulopathy [2]. The generic term 'glomerular deposition disease' has been proposed by pathologists [3]. To the best of our knowledge this is the first time that comma-shaped electron-dense deposits in the mesangium, subepithelial and subendothelial spaces have been reported. Moreover, Ronco and Aucouturier [4] classified cryoglobulinaemia kidney as a microtubular organized deposit in their pathologic classification of diseases with tissue depositions or precipitation of monoclonal Ig-related materials. We cannot exclude that the peculiar shape and diffuse distribution that we found could be related to the subsequent diagnosis of malignant uterine neoplasm.

Conflict of interest statement. None declared.

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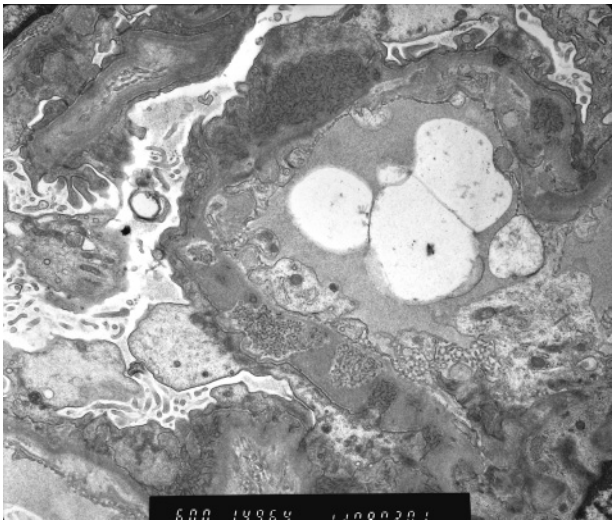

Fig. 1. Diffuse glomerular deposition of fibrillary comma-shaped electron-dense organized deposits.

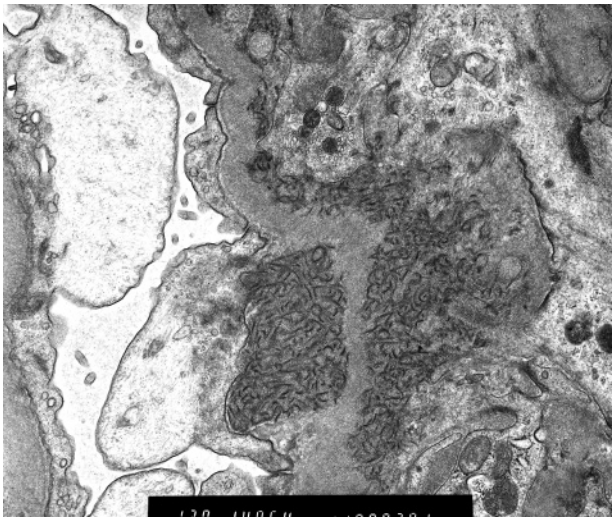

Fig. 2. Curved fibrils with a diameter of 24 nm infiltrating the glomerular membrane.

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