Renal manifestations of Waldenström's macroglobulinemia (WM)

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Monoclonal immunoglobulin (Ig) can injure the tubular structure of the kidney, causing cast nephropathy and, more rarely Fanconi's syndrome. It can also cause glomerulopathies either organized or non-organized according to the structure of the deposits. Organized deposits can have a fibrillar structure, such as in AL amyloidosis. In other cases, deposits have a microtubular structure complicating a type I or type II cryoglobulinemia or featuring the so-called GOMMID or «immunotactoïd» glomerulonephritis. Non-organized granular Ig deposits characterize the monoclonal Ig deposition diseases (Randall's diseases).
The analysis of the proteinuria is a key point for recognizing these different renal diseases. When it is mainly composed of light chains, a Fanconi syndrome should be suspected but much more often, this means cast nephropathy. Proteinuria mainly composed of albumin indicates a glomerular process which can be defined by checking the other characteristics of the kidney syndrome, by searching for extra-renal symptoms and by looking at the monoclonal gammopathy.
As far as WM or other IgM-secreting monoclonal proliferation are concerned, renal lesions are less frequent than in other monoclonal gammopathies. Cast nephropathy and Fanconi syndrome are rare and involvement of tubulo-interstitial structure of the kidney is not usually due to the monoclonal Ig *per se.* An infiltration of the interstitium by lympho-plasmacytic clonal B cells is much more frequent, usually causing low grade proteinuria and moderate renal impairment.
IgM-related glomerulopathies can be due to organized deposits most often amyloid, sometimes complicating a cryoprecipitating IgM. Randall's disease is rare and non organized glomerulopathies include cases of membranoproliferative glomerulonephritis without cryoglobulinemia. Intracapillary monoclonal deposition disease, a relatively rare but specific entity, is featured by granular IgM thrombi occluding capillary lumens without associated cellular proliferation. It is usually revealed by acute kidney injury with nephrotic syndrome and microscopic hematuria. The serum level of the monoclonal IgM is not always high and peculiar physico-chemical properties of the monoclonal Ig appear to be a key pathogenic factor irrespective of associated overt hyperviscosity.
Renal complications of WM and other IgM-secreting monoclonal proliferations are diverse, underscoring the value of kidney biopsy. By demonstrating a causal link between the lymphoproliferation and the renal damage, the biopsy sometimes indicates chemotherapy which may produce a dramatic improvement of renal manifestations.