ON THE UTILITY OF ELECTRON MICROSCOPY IN THE DIAGNOSTIC OF RENAL AMYLOIDOSIS


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Amyloidosis is defined as a disorder of protein metabolism due to the progressive deposition of abnormal proteins with a fibrillar appearance within the extracellular space, located on tissue or organ, or systemically.(1). There are several classifications of this entity; one of the most commonly used is the Kyle and Greipp (2), which combines clinic and biochemical forms of amyloidosis. However, there is not a satisfactory classification because it has been observed through electronic microscopy that the amyloid fibrils have basically the same ultrastructural characteristics. The histopathological diagnostic can be a difficult task when thick beams of collagen with a stain similar to the amyloids with hematoxylin and eosin staining are observed, even more in injuries associated to esclerosis. The small deposits of amyloids are hardly recognized too (3). The metachromasy from violet crystal is not always present and the preparations are not permanents. Congo Red stain is the most especific in which it is observed apple green birefrigency with polarized light when there are large enough deposits (4).Our research shows the results from a case of advanced glomerular sclerosis revealed from the histopathological study where it was not possible to define the etiology precisely reason why ultrastructural study was performed.

The sample of renal tissue taken by percutaneous biopsy was fixed in glutaraldehyde 3.2 % in buffer of cacodylate ph 7.4, 0.1M and 2.5% OsO4 in the same buffer, dehydrated in acetone and, embedded in Spurr resin, (it was processed according to the general technique of inclusion and cut for transmission electron microscopy). The ultrathin sections were examined with a JEOL JEM 100S transmission electron microscope

It was observed in the renal glomerulus’s infiltration of deposits of unramified filaments, arranged irregularly representing compact thick beams that sometimes arrange perpendicularly with respect to the basal membrane resembling thorns like those observed in some cases of Membrane Glomerulopathy (fig. 1)
This infiltration was found in capillary loops, in some areas it was observed capillary lights, obliterated by rejection from massive infiltration in subendothelial zone, glomerular basal membrane and subepithelial zone. It was remarkable the infiltration of the membrane by a thick coat of filament substance (fig. 2), like in the melange. Besides, it was observed signs of degeneration and necrosis in the prolongations of the podocytes and the cytoplasm of some endothelial cells.

The demonstration of the deposits of fibrils via electronic microscopy is necessary for the diagnostic of the renal amyloidosis when advanced glomerular sclerosis is present.

BIBLIOGRAPHY


Fig. 1. Compact thick beams arranged perpendicularly with respect to the basal membrane resembling thorns.

Fig. 2. Infiltration of the glomerular basal membrane by a thick coat of filament substance.