

Normal Renal Ultrastructure and Common Markers of Renal Disease

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Abstract

Transmission Electron Microscopy (EM) of various tissues and diseases has been extremely useful for diagnosis ever since the 1950's. However, since the advent of alternative technologies like monoclonal antibody immunocytochemistry in the 1990's and next generation DNA sequencing in the 2020's has reduced the usage of EM for diagnosis of neoplastic and inherited diseases respectively.

However, neither of those aforementioned techniques has significantly reduced the role of EM in diagnosing medical renal disease.

In those centres where the histology and immunofluorescence results are reporting pending EM, audits of the role of EM have consistently shown that EM confirms the diagnosis in 50% of cases, changes the diagnosis slightly in 25% and changes the diagnosis significantly in 25%.

Many renal pathologists in hospitals and related institutions devolve the unsupervised taking of EM images to scientific and technical staff. It is therefore imperative that those individuals are trained in renal ultrastructural pathology lest important diagnostic information is overlooked or taken at not the most appropriate magnification.

Part of doing this task competently includes issuing a description of findings.

This talk will go through the parts of my most used template report below:

EM Specimen Description

Received in glutaraldehyde: core of tissue xxx mm in length including capsule, chopped into xx pieces and processed entire to resin blocks B1- on by .

Toluidine blue stained semi thin sections revealed xx whole and xxx part glomeruli, of which xx are obsolete, the remaining xx showing xxx . Blocks xx are medulla.

Block B thin sectioned and stained by , glomeruli photographed, images by and description by .

EM showed the foot processes to be not/mild/moderate/severely effaced.

GBM's to be (normal mean diameter in adult 350 + or - 50 nm).

There are xxx mesangial (image), xxx subendothelial (image) and xxx subepithelial (image) deposits.

There are no/occasional/numerous endothelial tubuloreticular inclusions up to xx diameter (images).

Comment: IF & MDT awaited. H&E's/special stains not seen. Consistent with xxx