

THE CENTRAL ROLE OF PODOCYTE FOOT PROCESSES IN THE NORMAL CONDITIONS AND GLOMERULAR DISEASES

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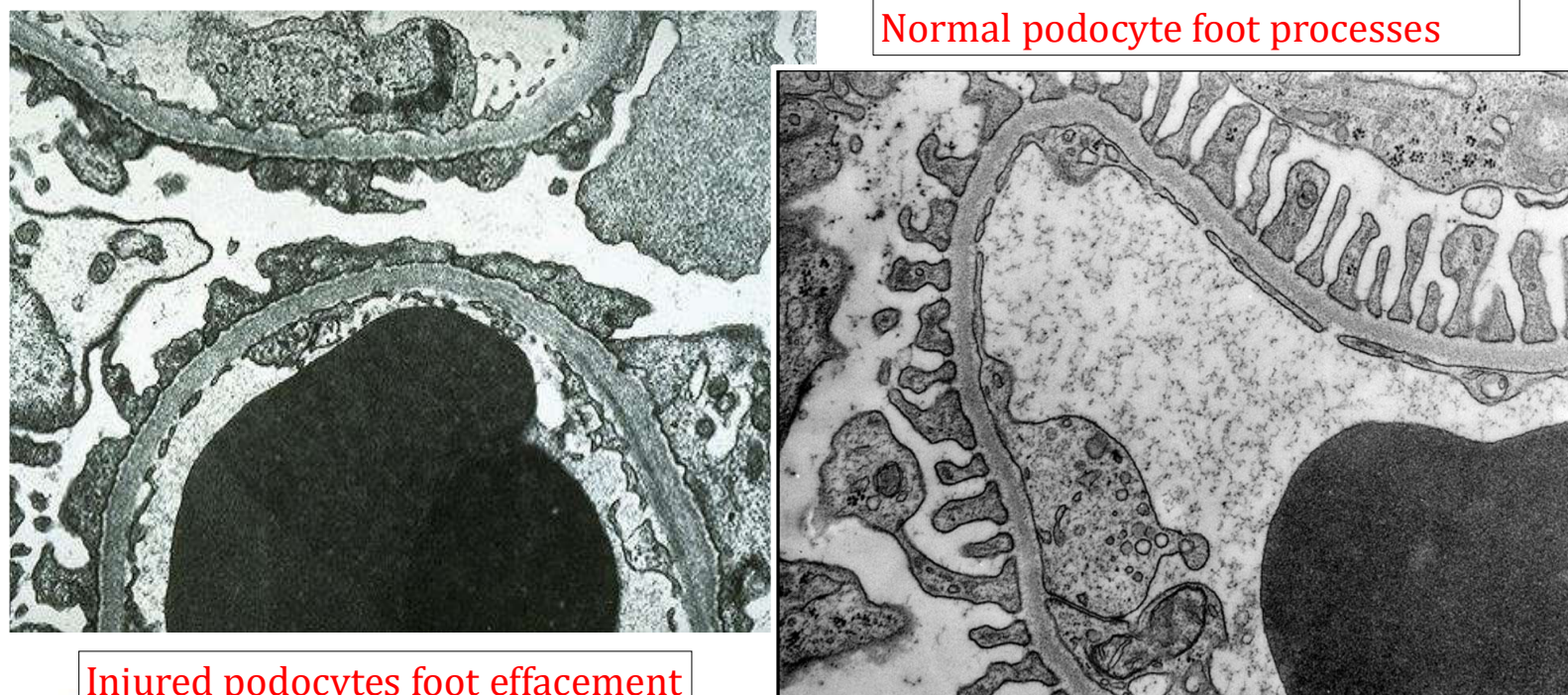
Introduction: Podocytes cells are part of the filtration barrier that prevent loss of proteins into urine. Podocytes injury that present in various range of diseases result in proteinuria. The mechanisms of injuries can vary, but all them lead to the foot process effacement of podocytes.

Keywords: podocyte, filtration barrier, glomerular disease, proteinuria.

Purpose: Studying the morphology and normal function of the podocytes foot process and of associated changes of them within glomerular diseases.

Material and methods: The research is based on literary sources that were analyzed using PubMed, NCBI and Medline published within the period of 2012-2022.

Results: The analyzed researches showed that the podocyte foot processes are attached to the glomerular capillaries at the glomerular basement membrane (GBM) by forming intercellular junctions that form slit diaphragm of filtration barrier. Morphologically, the podocytes are atypical polarized epithelial cells that are divided into 3 separate structural and functional elements: a large cell body, major extending processes, and minor foot processes. The apical domain is negatively charged, which is limiting the passage of albumin into urine. The injured podocytes undergo effacement, and in result reduction of filtration barrier function and proteinuria.



Normal podocyte foot processes

Injured podocytes foot effacement

Conclusions:

The podocyte foot processes are attached to the glomerular capillaries at the glomerular basement membrane (GBM) by forming intercellular junctions that form slit diaphragm of filtration barrier. The podocytes are divided into 3 separate structural and functional elements: a large cell body, major extending processes, minor foot processes. The apical domain is negatively charged, which is limiting the passage of albumin into urine. The injured podocytes undergo effacement, and in result reduction of filtration barrier function and proteinuria.