LS-2-P-5906 THE EFFECTS OF CYCLOOXYGENASE 1 AND 2 INHIBITION ON RENOMEDULLARY INTERSTITIAL CELLS IN RATS

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Renomedullary interstitial cells (RMICs) are the dominant cell type in inner renal medulla[1]. Their most distinct characteristic is multiple lipid droplets which believed to be storage units for precursors of prostaglandins in their cytoplasm[2,3]. Especially prostaglandin E2 (PGE2) is synthesized by RMICs in the kidney and produced by three steps[4-7]: 1)Arachidonic acid release from membrane phospholipids; 2)Formation of prostaglandin H2 from arachidonic acid by the action of cyclooxygenases; 3)Specific prostaglandin synthesis. In this study, we examined the effects of PGE2 inhibition on RMIC function. We formed four groups: First group was control. Second group in which we inhibited arachidonic acid release was injected with dexamethasone; third group was treated with ip indomethasine to inhibit non-specific cyclooxygenase and fourth group was injected with ip celecoxib to examine selective cyclooxygenase-2 inhibition. We dissected renal medulla of sacrificed animals after 10 days and counted lipid droplets in 50 random RMICs for each animal in electron microscopy. Our morphometric analysis showed that the number of lipid droplets was significantly decreased in dexamethasone group and was significantly increased in indomethasine and celecoxib groups when compared to control. 24-hours urine values collected on the 10th day were significantly increased in dexamethasone and indomethasine groups; in celecoxib group was similar to control. These results indicate that lipid droplets may be storage units of arachidonic acid, PGE2 inhibition may lead functional changes and apoptosis in RMICs.

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Fig. 1: The graphics of urine volume, urine pH, serum PGE2 levels and number of lipid droplets.

Fig. 2: A) The Alcian blue staining in renal papilla. B) The Alcian blue staining in renal inner medulla. C) The semi-thin sections dyed with toluidin blue.

Fig. 3: Immunohistochemical determination of Caspase-3 and CD44

Fig. 4: 1) Electron micrographs of RMICs in control group. 2) Different RMICs in DEX group. 3) Different RMICs in IND group. 4) Different RMICs in CXB group.