

Goldblatt kidney

Reduced blood flow to one renal artery (due to aneurysm, stenosis, tumor, embolus, fibromuscular dysplasia)



Stenosed artery experiences low flow, and produces angiotensin to increase BP and therefore improve flow to stenosis



Systemic BP increases, and stenosed artery experiences improved flow



Non-stenosed artery and rest of body also experience effects of increased pressure

HTN Damage

- I. Left ventricular hypertrophy
 - Heart has higher pressures to pump against, so must work harder
 - More LV strain → “gene expression” → LV hypertrophy
 - Greater muscle mass can perform greater workload
 - But**, this increases nutrient, blood flow, and oxygen demand → more vulnerable to ischemia, less fillable space

- II. Blood vessels
 - Higher systolic pressure → more strain on vessels → vascular smooth muscle hypertrophy → media of vessel hypertrophies
 - Higher pressure also causes endothelial damage → accelerated atherosclerosis and aneurysm formation

- III. Brain
 - Higher systolic pressure → more strain on vessels → vascular smooth muscle hypertrophy → media of vessel hypertrophies
 - Accelerated atherosclerosis
 - More aneurysms and CVAs, tend to be hemorrhagic in nature
 - *especially lenticulostriate arteries which supply basal ganglia; and pons*

- IV. Kidney
 - Medial hypertrophy
 - Accelerated atherosclerosis → renal artery stenosis. . .etc.
 - Arteriolosclerosis → glomerulosclerosis and tubular atrophy (arteriolonephrosclerosis)
 - self-perpetuating process

- V. Retina
 - medial hypertrophy
 - accelerated atherosclerosis
 - endothelial injury
 - aneurysms