Retinal vascular disease
Hypertensive retinopathy

- The arteriosclerotic changes of hypertensive retinopathy are caused by **chronically elevated blood pressure**, defined as systolic greater than 140 mmHg and diastolic greater than 90 mmHg.

- Arterioles respond to elevated luminal pressure by vasoconstriction to reduce flow.

- Pathology develops, when the **increased pressure causes endothelial damage** (stretching of the endothelium, breaks, and leakage of plasma into the vessel wall).

- **Retinal hemorrhages** develop when necrotic vessels bleed into either the nerve fiber layer (flame shaped hemorrhage) or the inner retina (dot blot hemorrhage).

- **Cotton wool spots** are caused by ischemia to the nerve fiber layer secondary to fibrinous necrosis and luminal narrowing.

- **Exudates** occur later in the course of disease, surrounding areas of hemorrhage, as a result of lipid accumulation.

- **Papilledema** is a result of both leakage and ischemia of arterioles supplying the optic disc that undergo fibrinous necrosis.