

The Pathology of Glaucoma

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Case-Based Questions (please see page 3 for answers)

1.	The basic pathological abnormality involving the retina in primary glaucoma is:
a.	Accumulation of sub-retinal pigment epithelium drusen
b.	Degeneration of photoreceptors
c.	Degeneration of retinal ganglion cells in the ganglion cell layer
d.	Neovascularization and infarcts (cotton wool spots) in the nerve fiber layer
e.	Vasculitis involving the peripheral nerve fiber layer

2.	Cupping of the optic disc is associated with:
a.	Primary optic atrophy
b.	Coloboma
c.	Pilocytic astrocytoma of the optic nerve
d.	Glaucomatous optic atrophy
e.	Acute retinal necrosis

3.	The anatomical nodular prominence of Schwalbe line demarcating the termination of Descemet membrane and the anterior border of the trabecular meshwork is known as:
a.	Scleral spur
b.	Schlemm canal
c.	Trabecular meshwork
d.	Pars plana
e.	Posterior embryotoxon

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Question 1 Correct answer and rationale: **C) Degeneration of retinal ganglion cells in the ganglion cell layer**

Degeneration of retinal ganglion cells is the basic pathological abnormality involving the retina in primary glaucoma. Choice A refers to age related macular degeneration, and choice D refers to diabetic retinopathy. Photoreceptor degeneration and vasculitis typically do not occur in glaucoma.

Question 2 Correct answer and rationale: **D) Glaucomatous optic atrophy**

Cupping of the optic disc distinguishes glaucomatous optic atrophy from primary optic atrophy. Cupping also suggests that elevated intraocular pressure (IOP) is a major risk factor in the pathogenesis of glaucomatous optic atrophy. Coloboma is a congenital defect that can involve optic nerve tissue. Pilocytic astrocytoma may result in expansion of the disc. Acute retinal necrosis is typically virus-related and does not result in cupping.

Question 3 Correct answer and rationale: **E) Posterior embryotoxon**

Posterior embryotoxon is the anatomical nodular prominence of Schwalbe line demarcating the termination of Descemet membrane and the anterior border of the trabecular meshwork. The scleral spur is the posterior edge of the trabecular meshwork. Schlemm canal is the lymphatic-like vascular drainage site for aqueous humor. The pars plana merges the ciliary body with the retina.