

11.4.4. Pathology (IV): Trauma

Chemical Injuries

- alkali penetrate the eye readily
 - increase in aqueous pH
 - decrease in aqueous glucose and ascorbate
 - often result in cataract
 - acutely or as a delayed effect
 - less likely to result in cataract
- acids penetrate the eye less easily than alkali

Electrical Injury

- protein coagulation
 - cataract formation
- more likely when current involves the patient's head
- linear opacities in the anterior subcapsular cortex
 - followed by lens vacuoles
- may regress, remain stationary, or mature to complete cataract

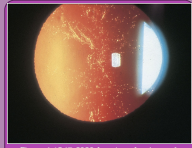


Figure 8-15 (© 2020 American Academy of Ophthalmology)

Metallosis

- trabecular meshwork
 - lens involvement occurs more rapidly if the foreign body is embedded close to the lens
- at first, yellowish tinge
 - later, rusty brown discoloration
- complete cortical cataract
- iron intraocular foreign bodies
 - Siderosis bulbi
- deposition of iron molecules in
 - iris
 - retina
 - Descemet membrane
 - anterior lens capsule
 - other intraocular basement membranes
- iron deposits in lens epithelium
 - petal-shaped yellow or brown pigment in lens capsule
 - radiates from anterior axial pole to equator
 - "sunflower" cataract
 - usually causes no significant loss of vision
 - pure copper (>90%) can cause severe inflammatory reaction and intraocular necrosis
- copper intraocular foreign bodies
 - Chalcosis

Contusion

- Vossius ring
 - ring of pigment from the pupillary ruff on the anterior lens surface
 - visually insignificant
 - gradually resolves
 - indicator of prior blunt trauma
 - acute or late
 - portion of lens or entire lens
- Traumatic cataract
 - initial manifestation
 - stellate or rosette-shaped opacification (rosette cataract)
 - axial
 - posterior lens capsule
 - Figure 4-10 (© 2020 American Academy of Ophthalmology)
- lens dislocation
 - Figure 4-11 (© 2020 American Academy of Ophthalmology)
 - mild contusion cataracts can improve spontaneously in rare cases
 - symptoms
 - rapid equatorial expansion
 - zonular fiber disruption
 - fluctuation of vision
 - impaired accommodation
 - monocular diplopia
 - high astigmatism
 - clinical presentation
 - dislocates in any direction
 - anteriorly into the anterior chamber
 - posteriorly into the vitreous cavity
 - iridodonesis
 - phacodonesis
 - retroillumination
 - zonular disruption
 - ++ cataract formation

Dislocation and subluxation

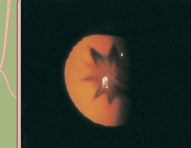


Figure 4-10 (© 2020 American Academy of Ophthalmology)

Perforating and Penetrating Injury

- opacification of cortex at site of rupture
 - progressing rapidly to complete opacification
- a small perforating injury of lens capsule may heal
 - stationary focal cortical cataract
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- Figure 4-13 (© 2020 American Academy of Ophthalmology)

Intraocular Foreign Bodies

- may cause cataract formation
- foreign body is not ferrous or cupric
 - may be retained within the lens without significant complication if
 - anterior lens capsule seals

Radiation

- lens is extremely sensitive to ionizing radiation
 - >2 Gy x-ray in one fraction
 - <20 years between exposure and clinically apparent cataract
 - dose of radiation
 - related to period of latency
 - younger patients are more susceptible
 - patient's age
 - punctate opacities within the posterior capsule
 - radiate toward the equator
 - feathery anterior subcapsular opacities
 - may progress to complete lens opacification
 - infrared radiation + intense heat
 - first clinical signs
 - infrared radiation (glassblowers' cataract)
 - outer layers of the anterior lens capsule peel off
 - true exfoliation of the lens capsule
 - exfoliated outer lamella tends to scroll up on itself
 - ++ cortical cataract
 - lens is susceptible to damage from ultraviolet (UV) radiation
 - long-term exposure to sunlight → increased risk of cortical cataracts
 - avoidable risk!
 - only 10% of risk of cortical cataract in temperate climates is sunlight-related
 - prescription corrective lenses & nonprescription sunglasses
 - decrease UV transmission by >80%
 - decreases ocular sun exposure by 30%–50%
 - wearing a hat with a brim
 - clinicians should encourage their patients to avoid excessive sunlight exposure
 - lenses sold in the United States must conform to the American National Standards Institute (ANSI) requirements aimed at reducing UV transmission
 - causes cataract in lab animals
 - human case reports/epidemiologic studies are more controversial
 - anterior/posterior subcapsular opacities
 - Ultraviolet radiation
 - Microwave radiation