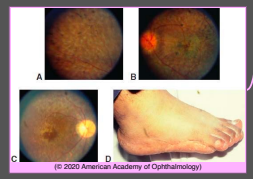
Retinal Degeneration With Systemic Involvement I

Bardet-Biedl syndrome

- genetics
  - inheritance pattern
    - multigenic
    - autosomal recessive
  - affected proteins mediate and regulate microtubule-based intracellular transport processes
- a number of different diseases with similar constellation of findings
  - pigmentary retinopathy
    - severe rod-cone dystrophy
      - usually sine-pigmento
      - usually without bone-spicule pigment clumping
    - bull's eye atrophic maculopathy
  - look for scars from previous surgeries
  - polydactyly
  - obesity
  - hypogonadism
  - cognitive disability
  - pyelonephritis
  - urethral reflux



Usher syndrome

- definition
  - retinitis pigmentosa (RP)
  - congenital sensorineural hearing loss
- demographics
  - 3/100,000 prevalence
  - 10% of RP patients have profound deafness
  - 6% of children in deaf schools
- Types
  - early & profound deafness
  - type 1
    - starts in childhood (by age 10 years) RP
    - vestibular areflexia
  - type 2
    - moderate to severe hearing loss
    - starts in the second decade RP
    - normal vestibular function
  - type 3
    - progressive hearing loss
    - variable RP
    - sporadic vestibular function
- genetics
  - autosomal recessive
  - encode proteins present in cilia of inner ear and in cone outer segments 16 known genes
- differential diagnosis of pigmentary retinopathy + hearing loss
  - Alport syndrome
  - Alstrom syndrome
  - Cockayne syndrome
  - spondyloepiphyseal dysplasia congenita
  - Hurler syndrome
  - Refsum disease
  - congenital rubella

Pigmentary retinopathy

- panretinal disturbance of retina and RPE
- pigmentary alterations
  - pigment deposits
    - spicules
    - clumps
  - RPE depigmentation (atrophy)

Leber congenital amaurosis (LCA)

- Clinical
  - severely reduced vision from birth 20/200 to NLP
  - severely diminished or extinguished ERG signal present at birth
  - wandering nystagmus
  - some infants rub or poke their eyes (oculodigital reflex)
  - If ERG changes are progressive, evaluation should include careful screening for congenital syndromes
  - in early stages, obvious fundus changes are rare
  - central macular atrophic lesions
  - early-onset cataracts
  - keratoconus
  - older children
  - normal intelligence ± psychomotor impairment secondary to sensory deprivation
- Genetics
  - 3 autosomal dominant
  - 18 autosomal recessive RPE65 mutation
  - some forms of LCA involve developmental defects, while others represent degenerations of normally formed retina
- Types
  - nonsyndromic
  - syndromic
    - seizures
    - clear deterioration of neurologic/mental status
    - decline in school performance
    - molecular genetic diagnosis can identify potential systemic syndromes that warrant medical management
  - postinfectious etiologies should be considered based on clinical history and clinical findings
- Diagnostic testing
  - ERG minimal or undetectable response
  - ERG cannot determine if the condition is stationary (congenital stationary night blindness [CSNB] or achromatopsia) or progressive (rod–cone dystrophy or cone–rod dystrophy)
  - OCT
  - molecular genetic testing
  - best method for distinguishing stationary and progressive hereditary retinopathies
- gene therapy
  - Luxturna
    - RPE65 mutation-associated LCA
    - aged 1 year or older
    - adeno-associated virus vector

Ophthalmology Mind Maps
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