Night Blindness

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Etiology

Night Blindness may exist from birth or be caused by injury or malnutrition (for example, vitamin A deificiency).

Causes:

- Vitamin A deficiency
- Retinitis Pigmentosa & other retinal degenerations
- Congenital night blindness
- Pathological myopia
- Peripheral cortical cataract & Corneal opacities
- Advanced Primary open angle glaucoma

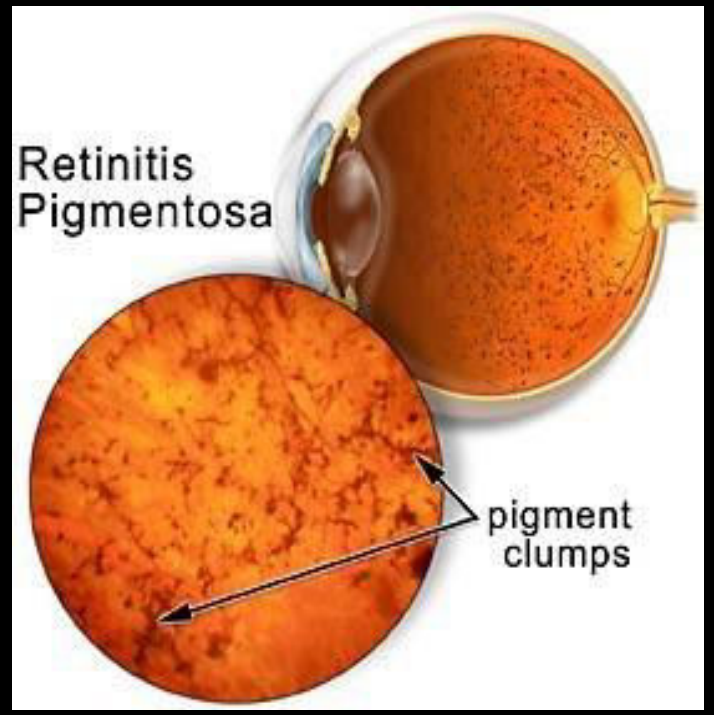
Retinitis Pigmentosa

- A disorder in which the rod cells in the retina gradually lose their ability to respond to the light.
- Patients suffering from this genetic condition have progressive nyctalopia and eventually their daytime vision may also be affected (Hemerlopia).

Mode of Transmission

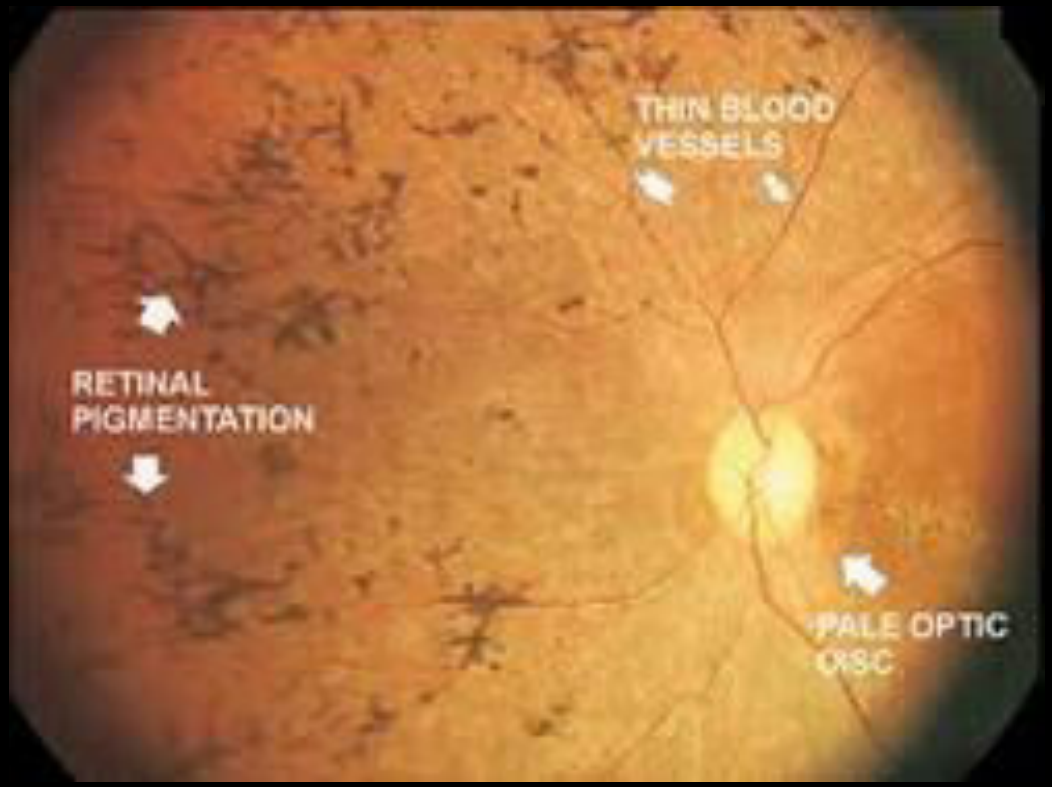
- Autosomal dominent
- Autosomol Recessive
- X – linked
- Sporadic

- Signs and Symptoms
  - Difficulty seeing dim lighting
  - Tendency to trip easily bump into objects when in poor lighting
  - Gradual loss of peripheral vision
  - Glare
  - Loss of contrast sensitivity
  - Eye fatigue (from straining to see)



Detection and Diagnosis

- Retinitis pigmentosa is usually diagnosed before adulthood.
- Often the patient complains of difficultly with night vision.
- The diagnoses by examining the retina with an ophthalmoscope
  - Waxy Pale Disc
  - Arteriolar attenuation
  - The classic sign of RP "bone-spicules.“
- Electroretinography (ERG).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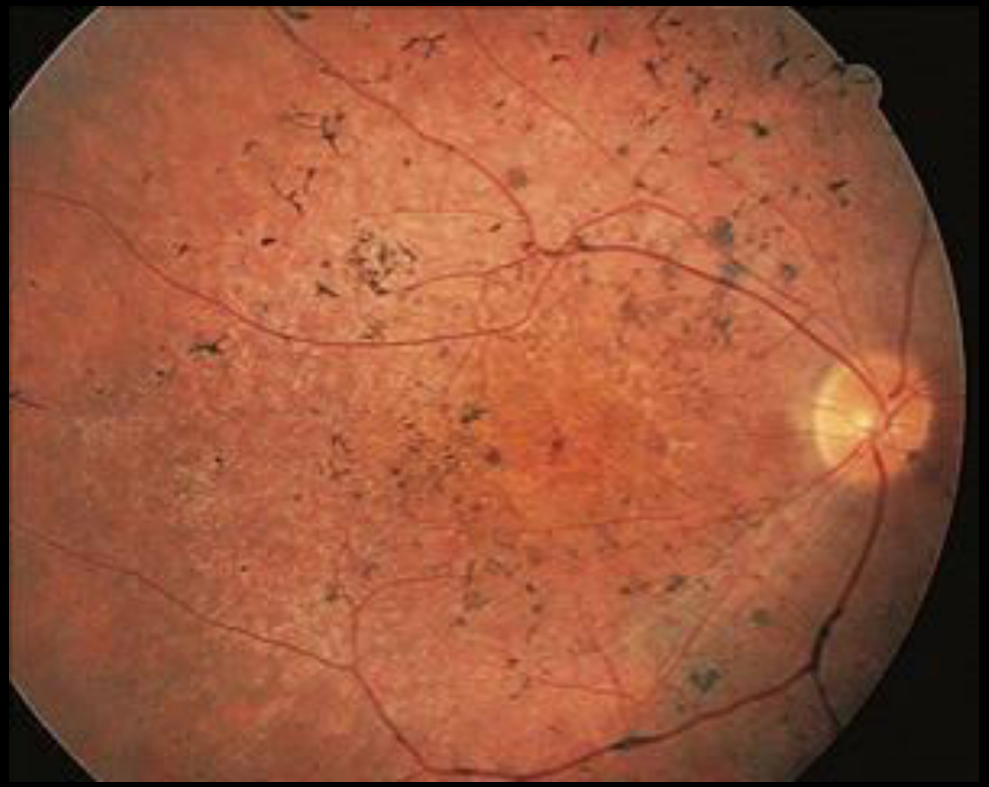
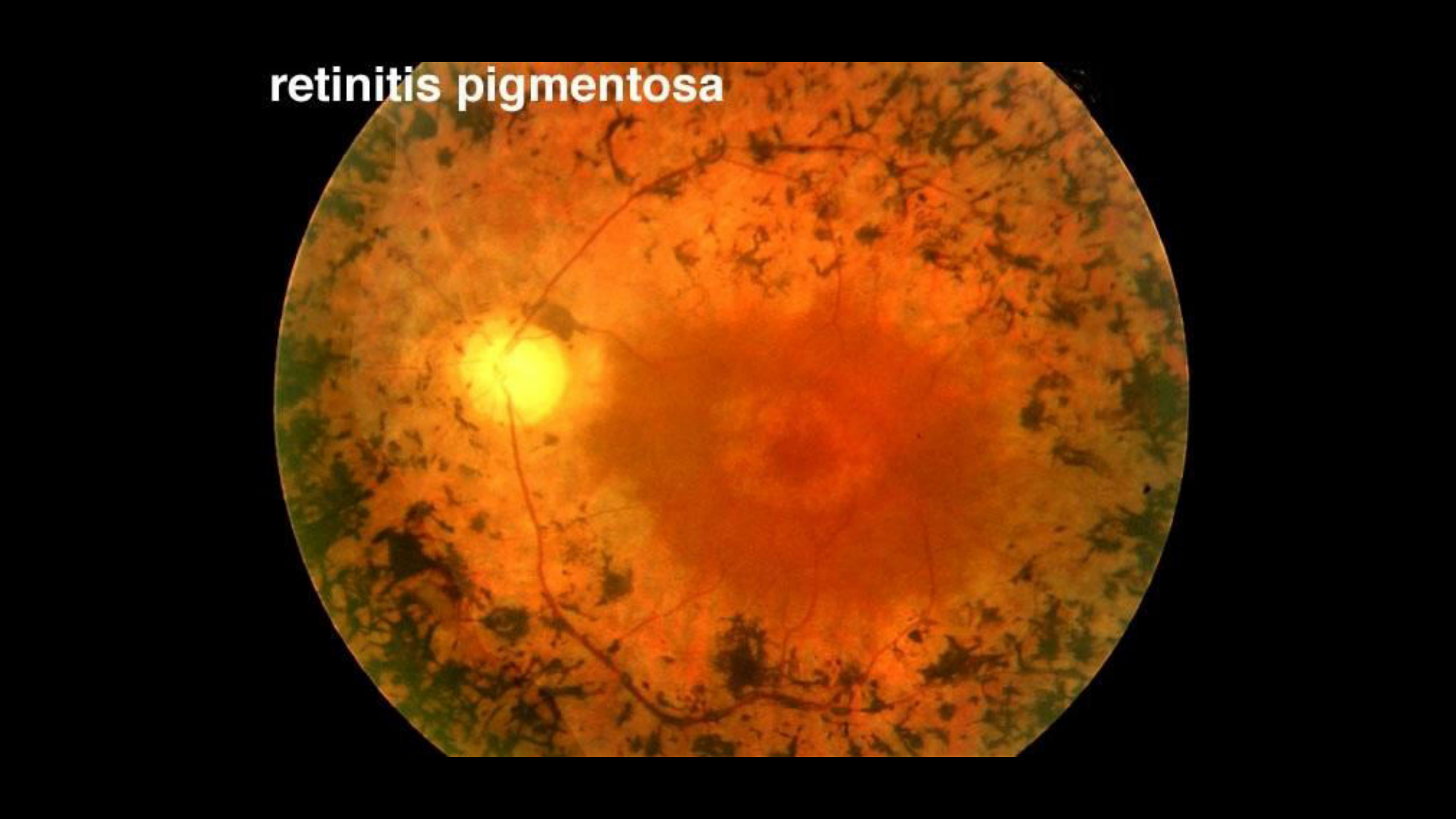



retinitis pigmentosa

Associations of RP

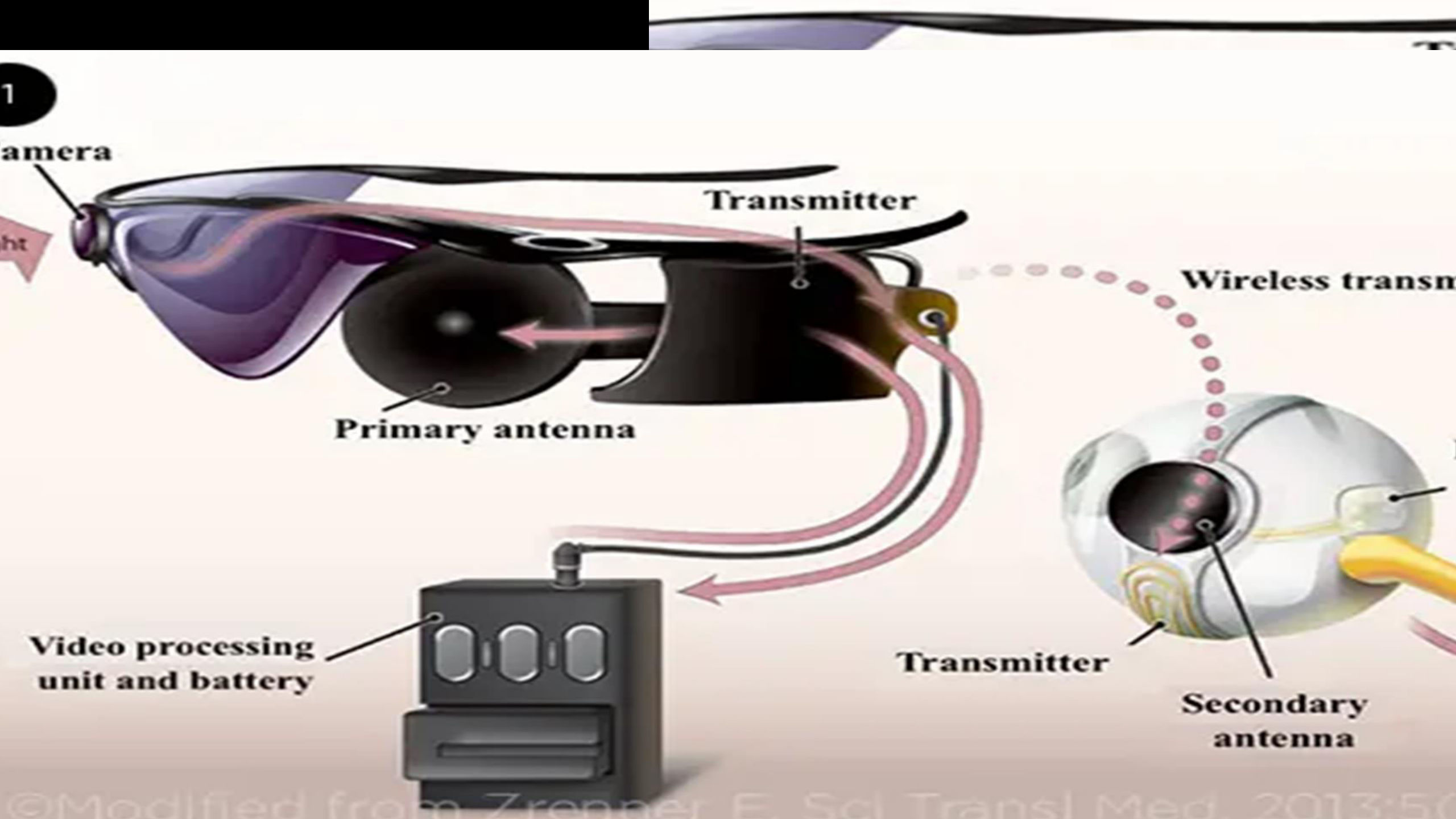
- Myopia
- Open angle glaucoma
- Macular oedema
- Retinal detachment
- Keratoconus
- Bardet Biedel syndrome
- Refusum disese
- Neuropathy
- Ataxia

Treatment

- There is currently no standard treatment or therapy for retinitis pigmentosa
- However, scientists have isolated several genes responsible for the disease.
- Once RP is discovered, patients and their families are encouraged to seek genetic counseling and trait.
- Low vision aids
- Diet and supplements

Treatment

- Vitamin A 15000 IU per day
- Omega 3 supplement
- Argus 2 Retinal prosthesis
- Gene Therapy (luxturna RPE65gene)
- Registration with Blind Association
- White stick
- Guide dogs
- Dark glasses
- Well illuminated bright light in the room.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Vitamin A Deficiency

- Inhibits the production of rhodopsin (the eye pigment responsible for sensing low light situations) found in the retina, composed of retinal (active form of Vitamin A)
- The decreased amount of rhodopsin in the eye implies that there is inadequate retinal to bind to opsin
- Therefore, night blindness results

Functions of Vitamin A: Vision

- Retinal is a necessary structural component of rhodopsin or visual purple, the light sensitive pigment within rod and cone cells of the retina.
- If inadequate quantities of vitamin A are present, vision is impaired.

Causes

- Ineduate intake
- Fat malabsortion
- Liver diseases

Night Blindness

- Lack of vitamin A causes night blindness or inability to see in dim light.
- night blindness occurs as a result of inadequate pigment in the retina.
- It also called tunnel vision.
- Night blindness is also found in pregnant women in some instances, especially during the last trimester of pregnancy when the vitamin A needs are increased.

Night blindness

In dim light, you can make out the details in this room. You are using your rods for vision.

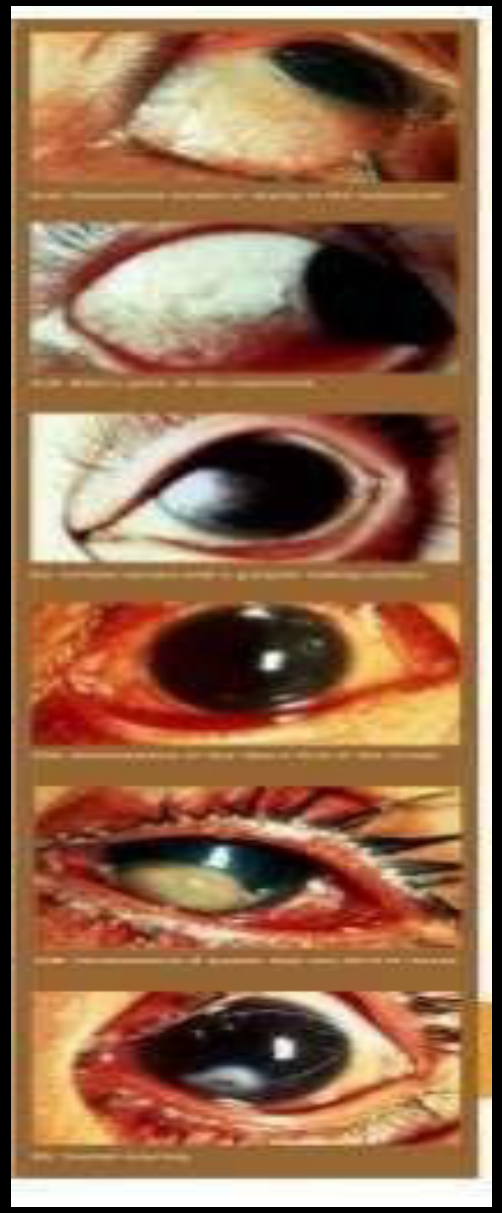
A flash of bright light momentarily blinds you as the pigment in the rods is bleached.

You quickly recover and can see the details again in a few seconds.

With inadequate vitamin A, you do not recover but remain blinded for many seconds.

Classification of xerophthalmia

- XN Night blindness
- X1A Conjunctival Xerosis
- X1B Bitot’s spot
- X2 Corneal Xerosis
- X3A Corneal ulceration/keratomalacia (< 1/3 corneal surface)
- X3B Corneal ulceration/keratomalacia (≥ 1/3 corneal surface)
- XS Corneal scar
- XF Xerophthalmic fundus

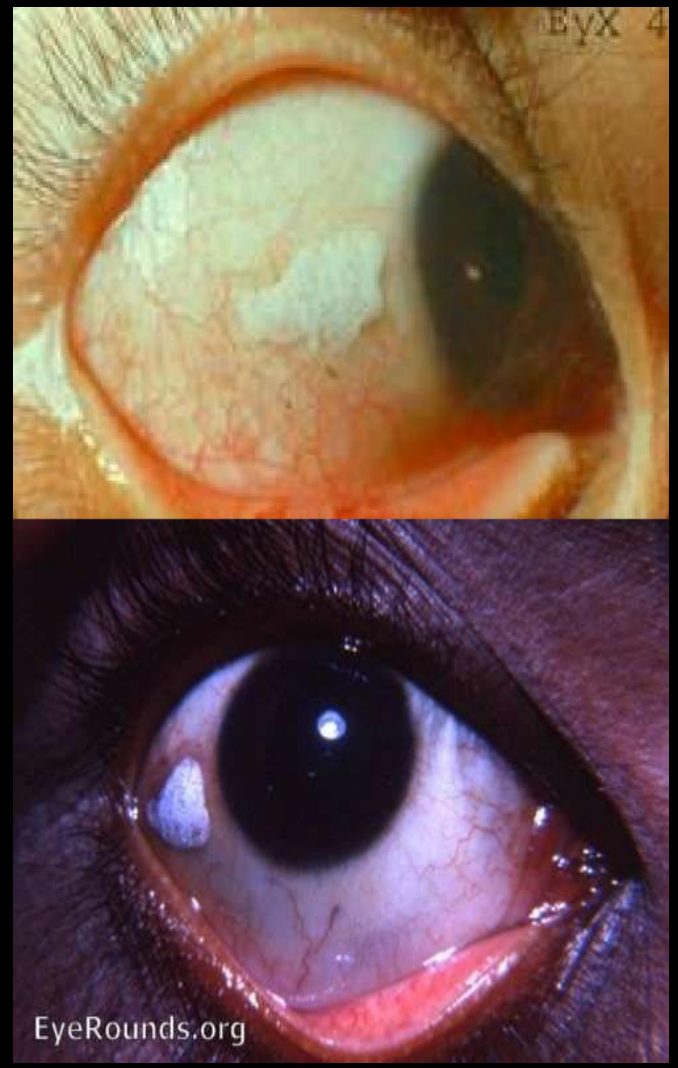


Conjunctival Xerosis

- Conjunctiva becomes dry and non wettable.
- Instead of looking smooth shiny it appears muddy &wrinkled.

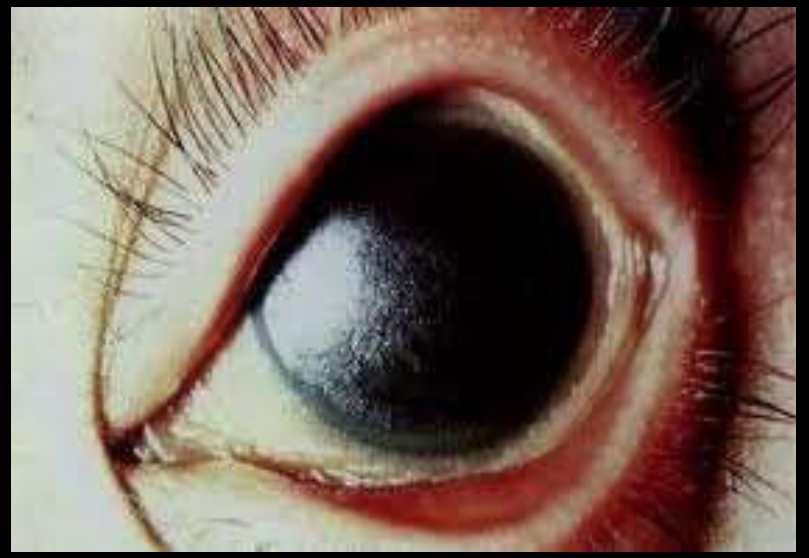
Bitot’s Spot

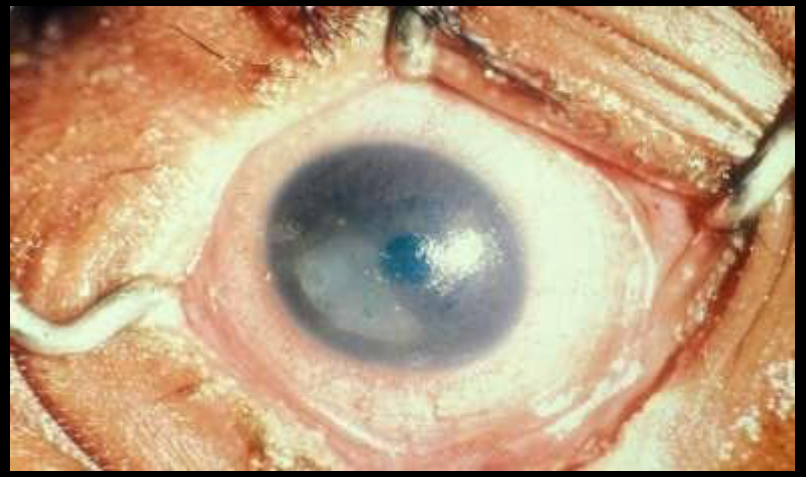
- These are foamy and whitish cheese-like tissue spots that develop around the eye ball, causing severe dryness in the eyes.
- These spots do not affect eye sight in the day light.



Keratomalacia

- One of the major cause for blindness.
- Cornea becomes soft and may burst.
- The process is rapid.
- If the eye collapses vision is lost.





Recommended treatment schedule

	6 -12 months	> 1 yr
Immediately	100,000 IU	200,000 IU
Next day	100,000 IU	200,000 IU

- 2–4 weeks later 100,000 IU 200,000 IU
- Severe Protein-Energy Malnutrition (PEM) Monthly until PEM resolves

  100,000 IU 200,000 IU

Summary

- Night Blindness
- Vitamin A deficiency
- Retinitis Pigmentosa

Any Questions?

MCQ

1. A 25 years old boy presents with complaints of night blindness since childhood which is progressive. There is no past history of glasses use or trauma. On examination his fundi shows waxy pale disc, arteriolar attenuation and pigmentary changes (bone spicules).

What is your most likely diagnosis in this case?

1. Cataract
2. Myopia
3. Retinitis Pigmentosa
4. Primary Open Angle glaucoma
5. Vitamin A deficiency

Ans: 3