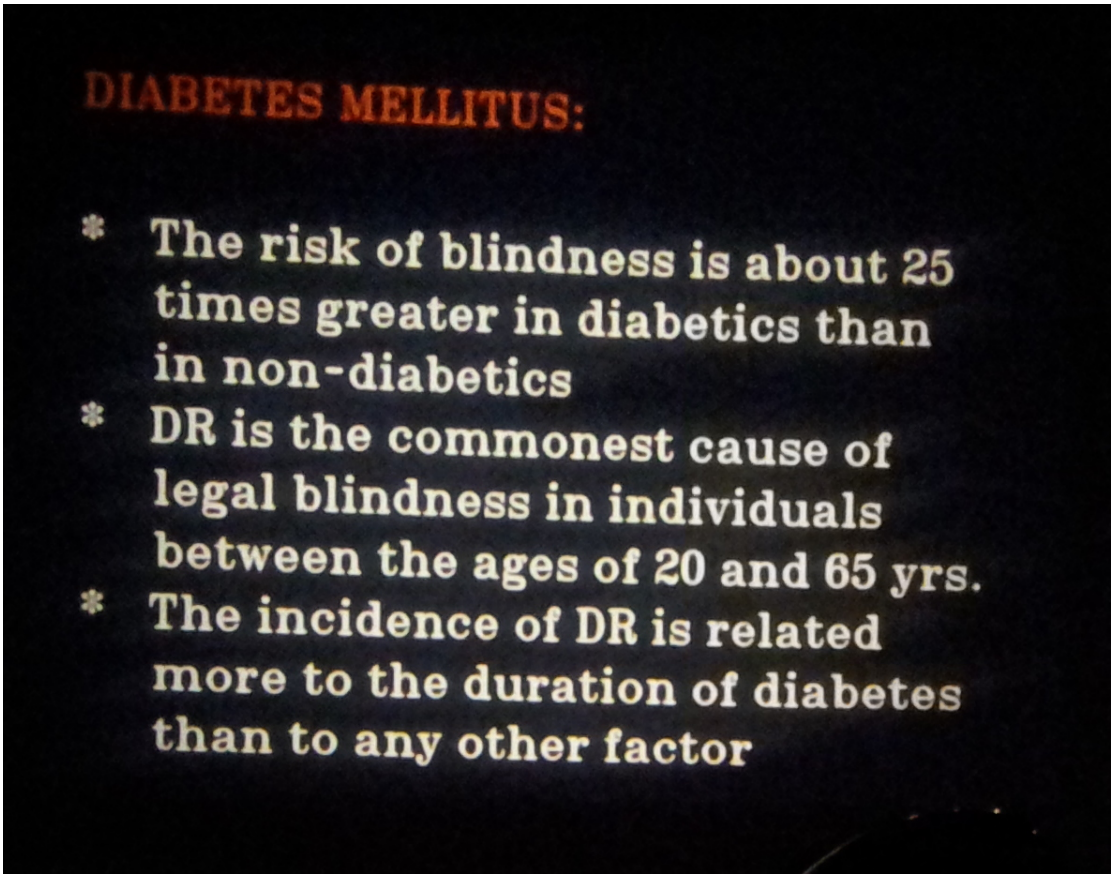
EYE &SYSTEMIC DISEASES : prof: Aboalasrsr

1-Diabetes mellitus:



diabetes can affect different structures in the eye :

Retina : the most important structure to be affected by DM
Lens: diabetic are more borne to develop cataract
Iris : sever retinal ischemia release of angiogenic mollecules new blood vessels formation in the iris (robeusis iridis) new vessels may close the angle neovascular glaucoma and sever visual loss (this type of glaucoma is difficult to treat) .
DM is a major cause of preventable blindness
DM causes irreversible blindness if not prevented

In retina:
What happens in the retina is tow things:
1-contenous neurodegenration of the gangellion cells in the retina .
2- microvascular disease .

The neurodegenration can take place even before any vascular changes and it is induced by hyperglycemia which eventually will cause apoptosis of gangellion cells

microvascular disease: is basically continuous loss of blood retinal barrier and occlusion of small retinal circulation (happens early)
loss of tight junction of endothelial cells
loss Blood-Retinal-Barriar
loss of pericytes that provide structural support for the retinal cappilaries occlusion

And as a result of these two changes leakage of blood, fluid and lipoprotein and occlusion of retinal capillaries and arterioles will occur which will lead to:

1-macular edema which is an important cause of visual loss in DM.
2-progressive retinal ischemia and release of angiogenic mollecules (VEGF) leading to a proliferation of fragile new vessels (angiogenesis) and here the patient has proliferative diabetic retinopathy.

Proliferative DR (late bad consequence) will cause:

1- recurrent vitreous hemorrhage.
2- traction retinal detachment due to the presence of fibrous tissue .

RISK FACTORS of DR:

Not-modifiable:

1- the duration of DM: this is the most important risk factor because after being diabetic for 10 to 15 years you will have some sort of diabetic retinopathy.

Modifiable:

1- poor control of blood sugar: tow major studies (UK Prospective Diabetes Study and Diabetes control and complications trial) have

proven that poor control of blood sugar will accelerate the progression of DR.
2-hyperlipidemia and obesity will magnify macular edema
3-anemia
4- pregnancy is known to accelerate the progression of DR and they require special care.

How to prevent blindness in diabetics?

The only way to do so is by the establishment of regular screening programs where a picture of the fundus is taken in regular basis using non-mydriatic fundus camera than the photo well be sent to a reading center which will provide certain instructions.

Why do we need screening programs?

Because the patient may be asymptomatic and has DR. the only situation where the patient will have a complain due to DR is when he develop vitreous hemorrhage which is very late.
The goal is to treat DR while the pt has 20/20 vision.

Who to screen?

Type 1 diabetic should be screened above the age of 5 because it is unlikely to develop DR before.
Type 2 diabetic should be screened once the diagnosed because you don't know when exactly did they get DM.
Female diabetics who are planning to get pregnant.

What we do after examining them?

The findings will determine your intervention as follows:

	uld be done
Good fundus and no sign of DR	1 year follow up
Mild non-proliferative disease	8 months follow up
Moderate non-proliferative disease	6 months follow up
Sever non-proliferative disease	Start focal laser
Proliferative DR	Pan retinal photocoagulation therapy

So laser should be started at the stage of sever non-proliferative disease.

What do you see in the retina?

1- sign of macular edema:

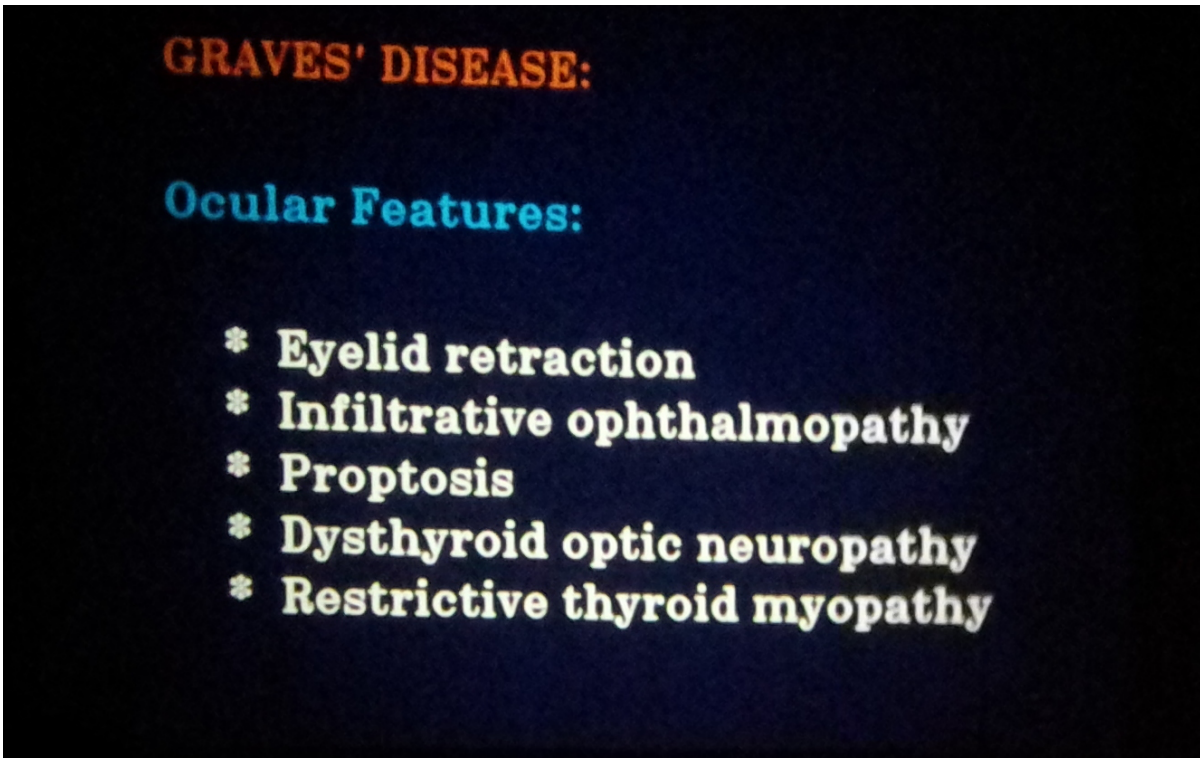
- hard exudate (sign of leakage)
- microaneurysms.

2- signs of ischemia:

- cotton wool spots (small areas of infarction due to focal occlusion of retinal arterioles)
- venous changes: (the most important sign of ischemia)
  - venous looping
  - venous beading (some dilatation & constriction)
- Intraretinal microvascular abnormalities (IRMA)
- For quadrants intraretinal hemorrhage
- In proliferative stage you'll see neovascularization and hemorrhages.
-

- the veins usually darker and thicker than arteries and they are the source of new vascularization not the arteries.

2-Gravis disease:



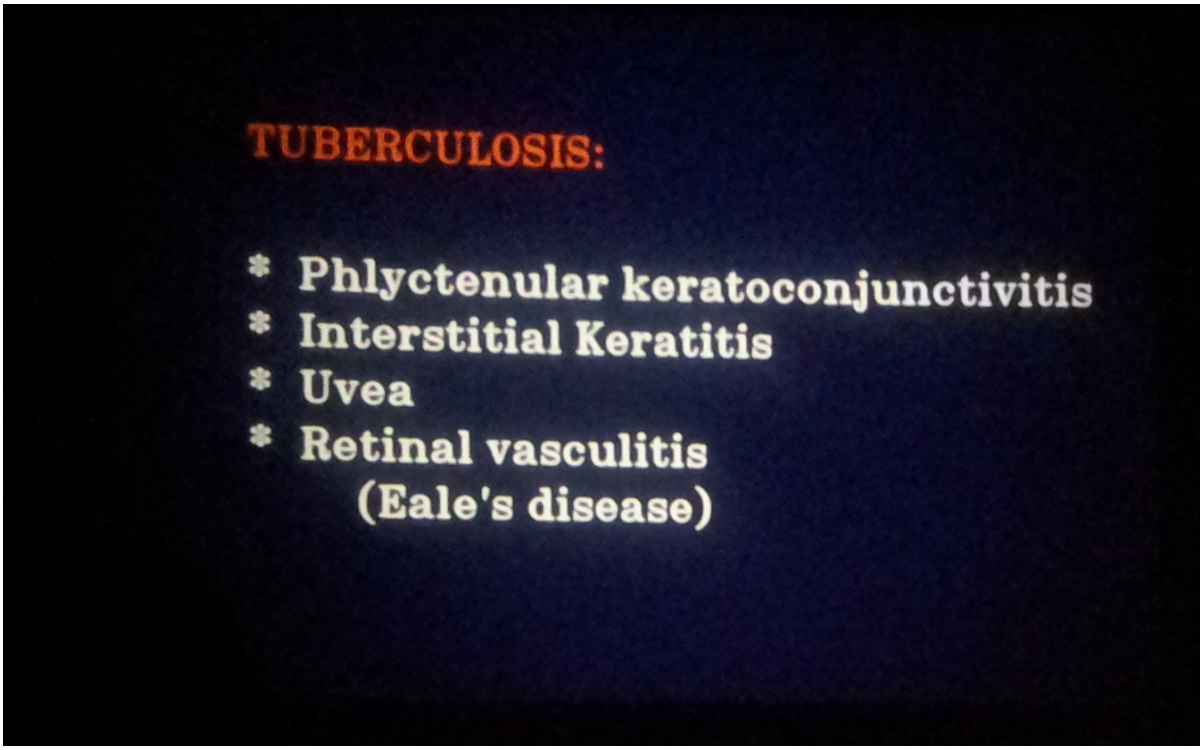
An autoimmune disease
Proptosis is due to the infiltration of the extraocular muscles with inflammatory cells (infiltrative ophthalmopathy).
Eyelid retraction happens as a result of sympathetic overstimulation of muller muscles.
Optic neuritis due to the compression of enlarged extraocular muscles on the optic nerve.
Restrictive thyroid myopathy will affect the movement of the globe by the fibrosis of extraocular muscles.

Normally the upper lid covers 1-2 mm of the cornea so if you can see the sclera between the cornea and the upper lid this is lid retraction.

Keratitis lagophthalmos :
lagophthalmos is the inability to close eyelids completely

So keratitis lagophthalmos is inflammation of the cornea due to dryness since they can't close eyes sufficiently.

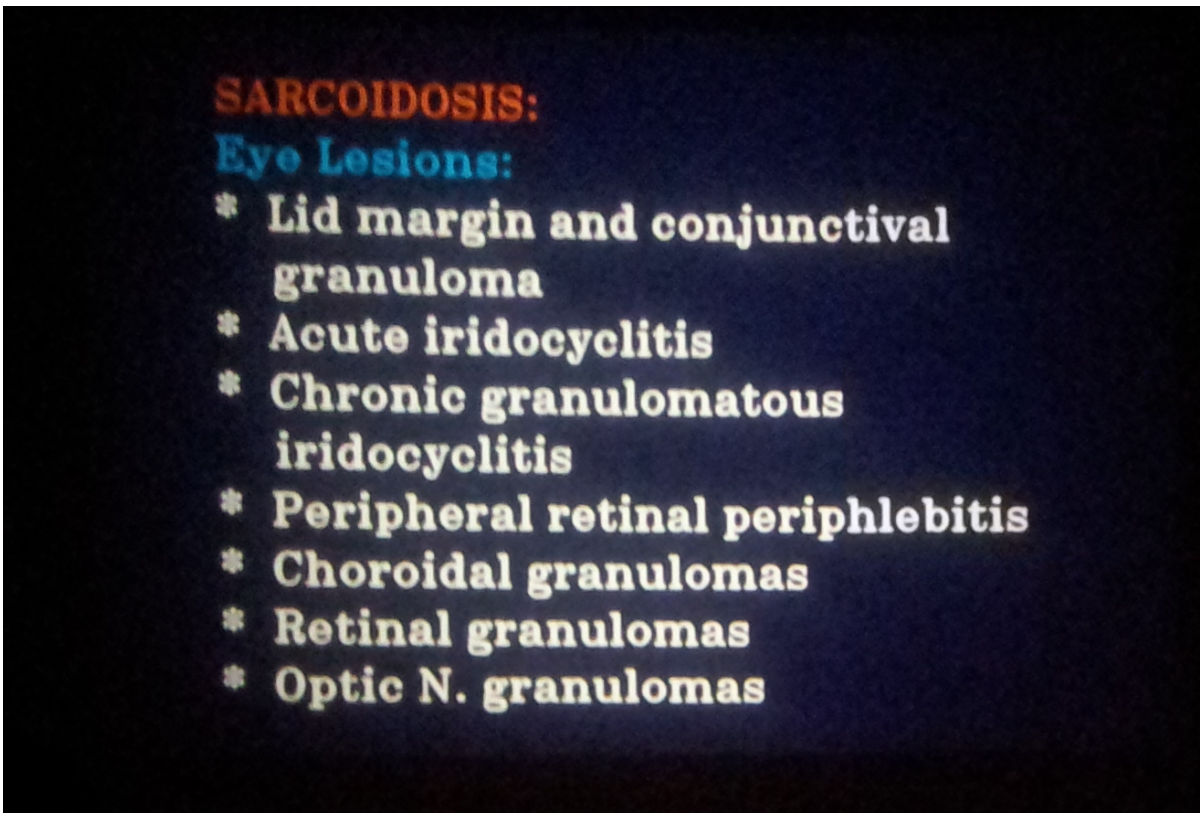
3-TUBERCULOSIS: (granulomatous disease #1)



- T.B. is very common and increasing worldwide
- T.B. is the most common cause of uveitis that needs admission.

- T.B. affect the eye in two ways:
  1- direct infection : choroidal granuloma
  2-hypersensitivity immune reaction to tuberculin protein causes retinal vasculitis.
- T.B. can memic any eye inflammation so high index of suspicion is required in order not to miss it .
- Suspect TB in a patient with eye inflammation who has been receiving steroids for long time without benefit.
- T.B. respond only to anti-tuberculosis drugs and need long treatment that can be months.
- Remember that you can have only TB uveitis without pulmonary TB or any other.

4-SARCEODOSIS: (granulomatous disease # 2)

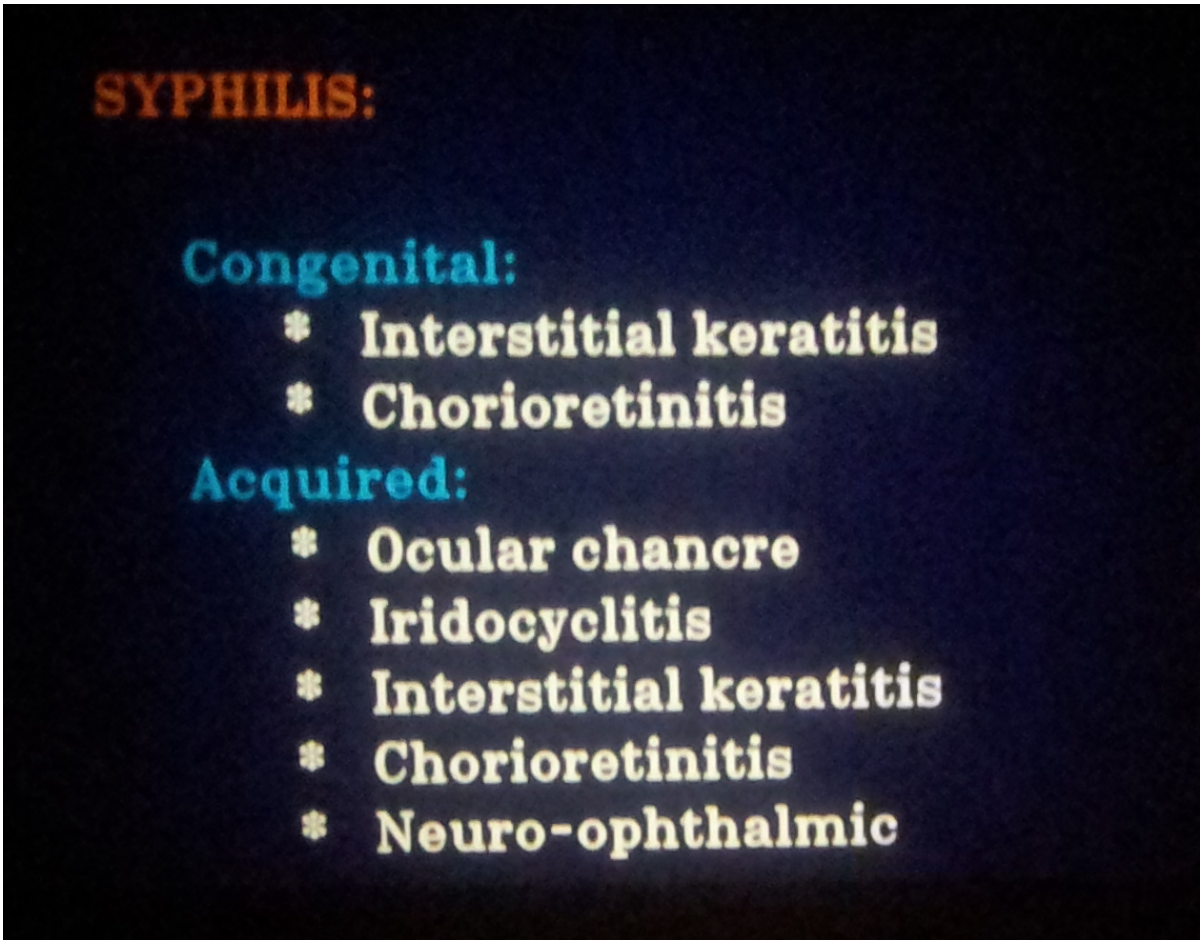


- causes granulomatous uveitis.
- The most common cause of uveitis in Japan.
- Cause non-caseating granuloma
- Can affect chest
- When suspected do:
  - C.T. chest and you may need trans-bronchial biopsy
  - Do angiotensin converting enzyme
  - Do serum lysozyme
  - Do LFT because it can affect the lever

- What do you see in the eye:
  - Mutton fat keratic precipitate (diagnostic)
  - Granulomas
  - Posterior synechia (adhesions)
- What do you see in the fundus:
  - Choroidal granulomas
  - Granuloma of optic nerve head
  - Vasculitis

- Unlike TB, granulomutas uveitis due to sarcoidosis responds well to steroids.

5-SYPHILIS:
SYPHLETIC UVEITIS



Not common here al7amd lellah
common in western countries because HIV is more common there .
iridocyclitis : inflammation of the celiary bodies

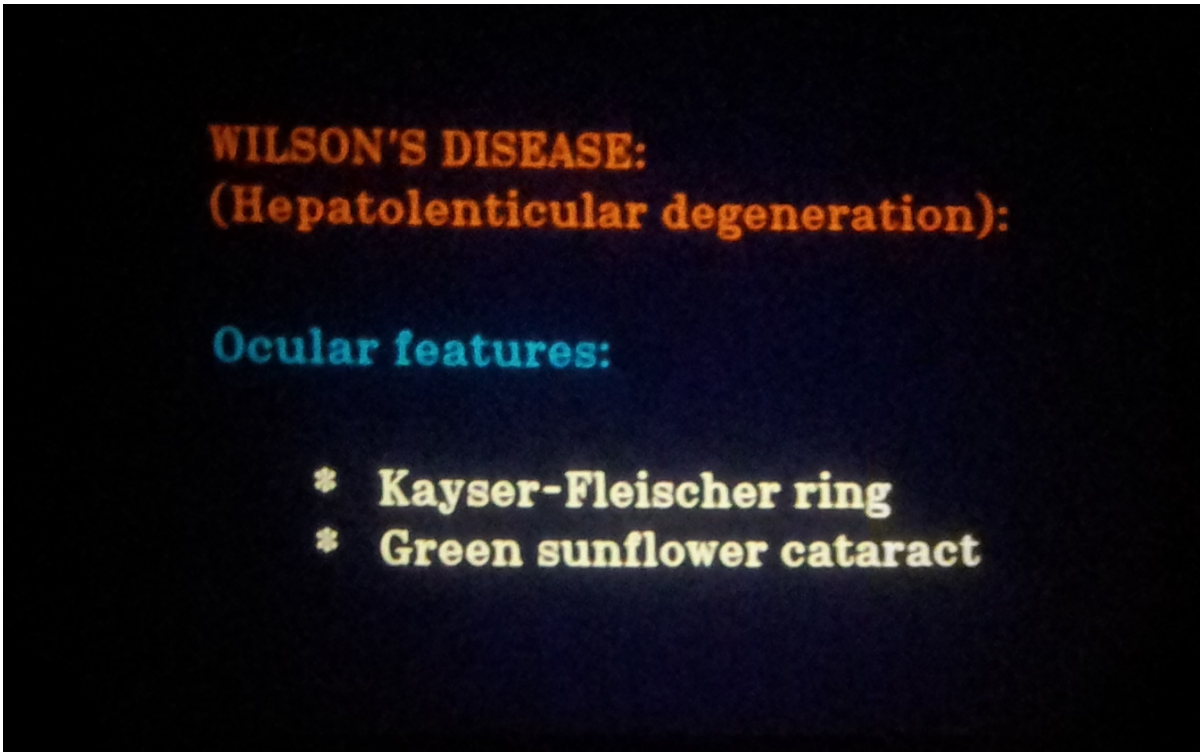
6-RUBELLA:

if the mother gets infected with rubella virus in the first trimester her baby well have it (in utero infection).

The baby well have:

- Eyes:
  - Small(microphthalmus)
  - Cataract
  - Glaucoma
  - Retinopathy
- Congenital heart disease
- Deafness

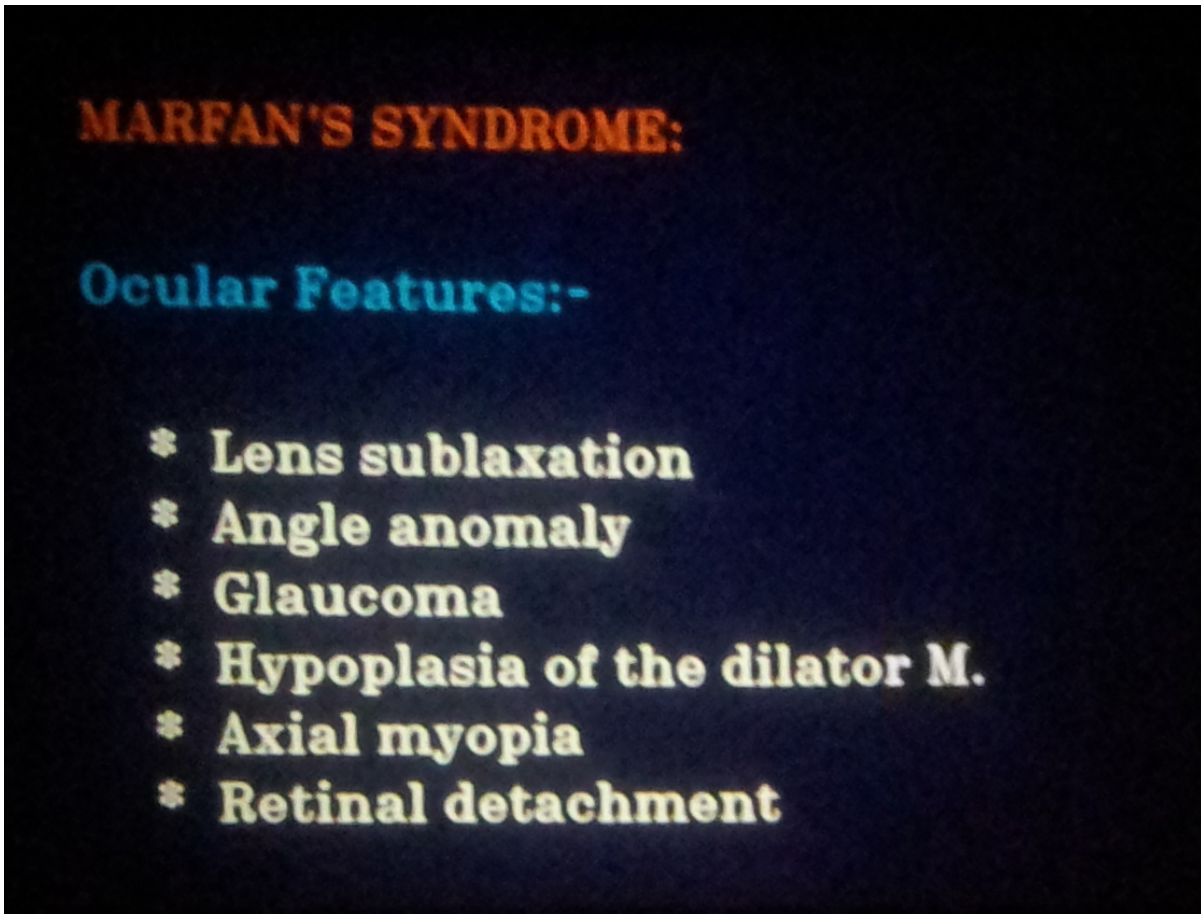
7-WELLSON DISEASE:



pediatric disease

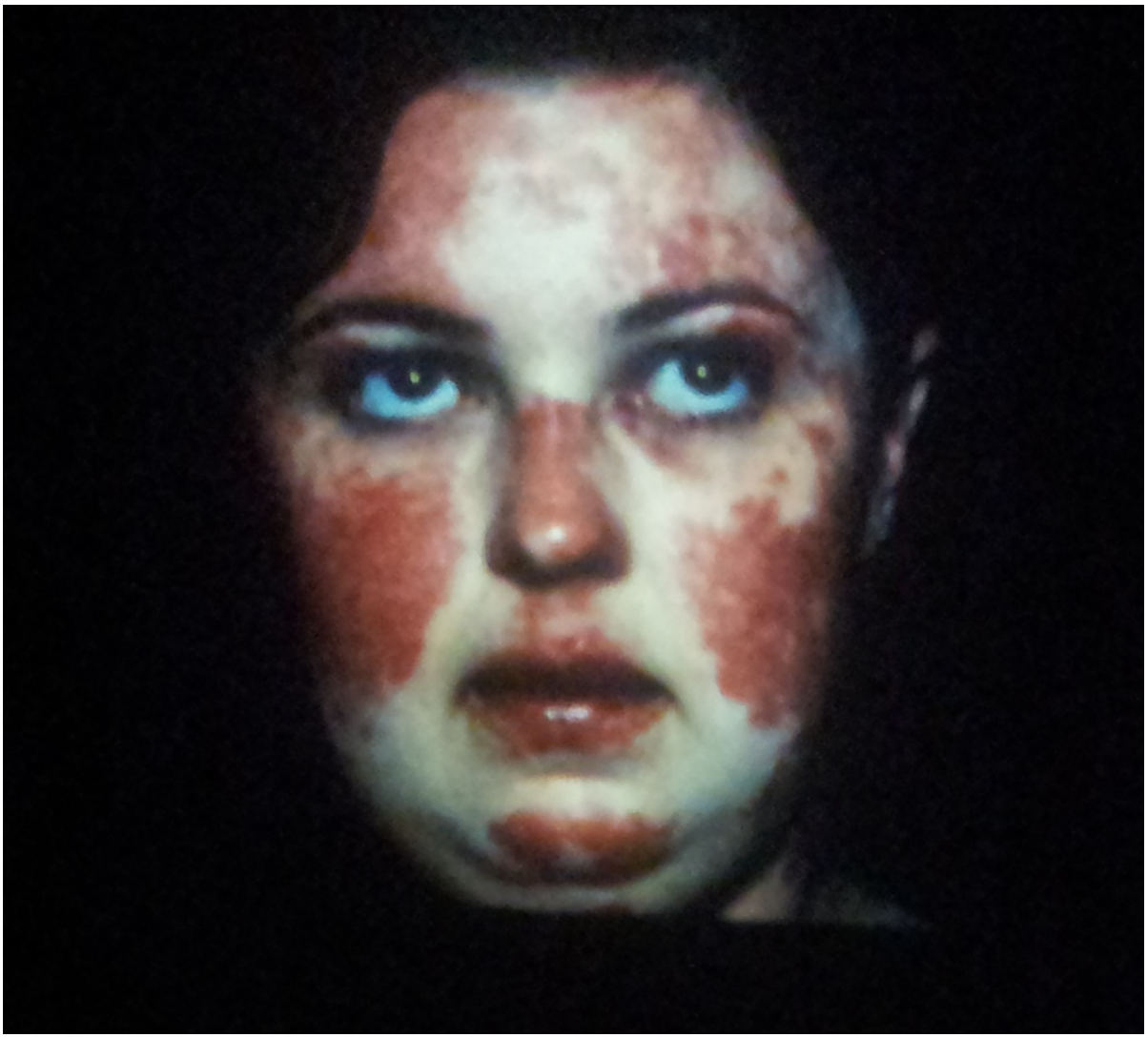
- Deficiency of alpha-2globulin ceruloplasmin which acts as a copper carrier.
- So copper will deposit :
  - In the cornea at the level of descemet's membrane in the peripheral part (kayser-fleischer ring)
  - In the lens (green sunflower cataract)

8-MARFAN’S SYNDROME:



They will have skeletal and heart pathology
Lens sublaxation is very important sign.

9-SLE:

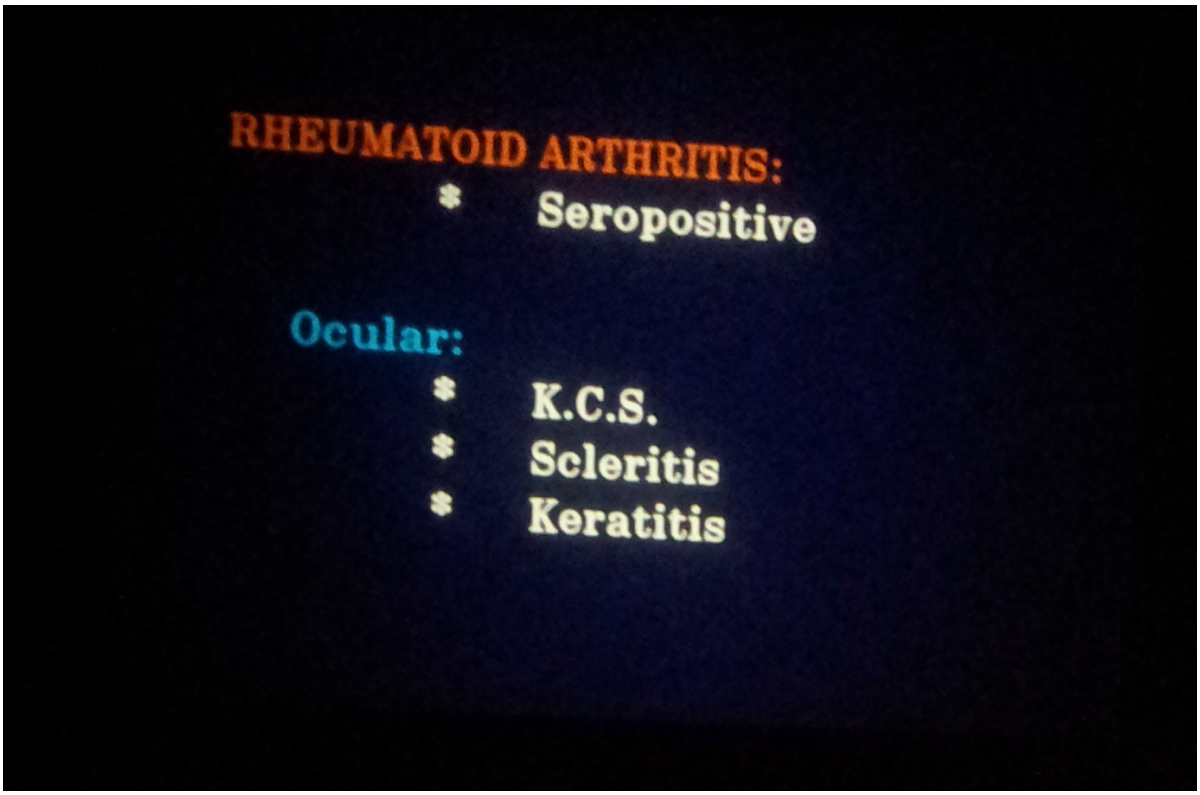


autoimmune disease which has many autoantibodies like:
anti-nuclear antibody
anti-double strand DNA
anti-phospholipid antibody (thrombosis and recurrent apportion)

in the eye SLE affect mainly the retina causing :

- Retinal vascular occlusion whish will appear as cotton wool spot and large areas of infarction.

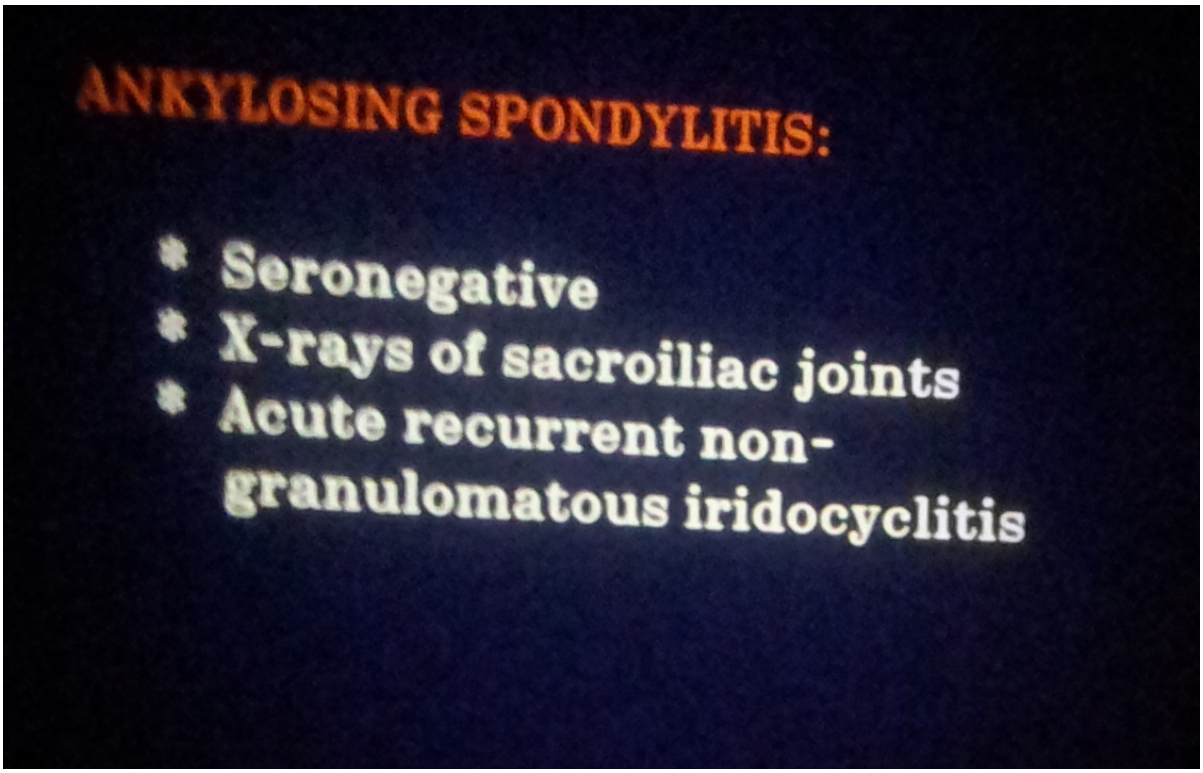
10-RHOMATOID ARTHRITIS:



- dryness and KeratoConjunctivitis Sicca diagnosed by staining with Rose Bengel stain.
- Scleritis: melting of the sclera and loss of the eye.

11-ANKYLOSING SPONDYLITIS:

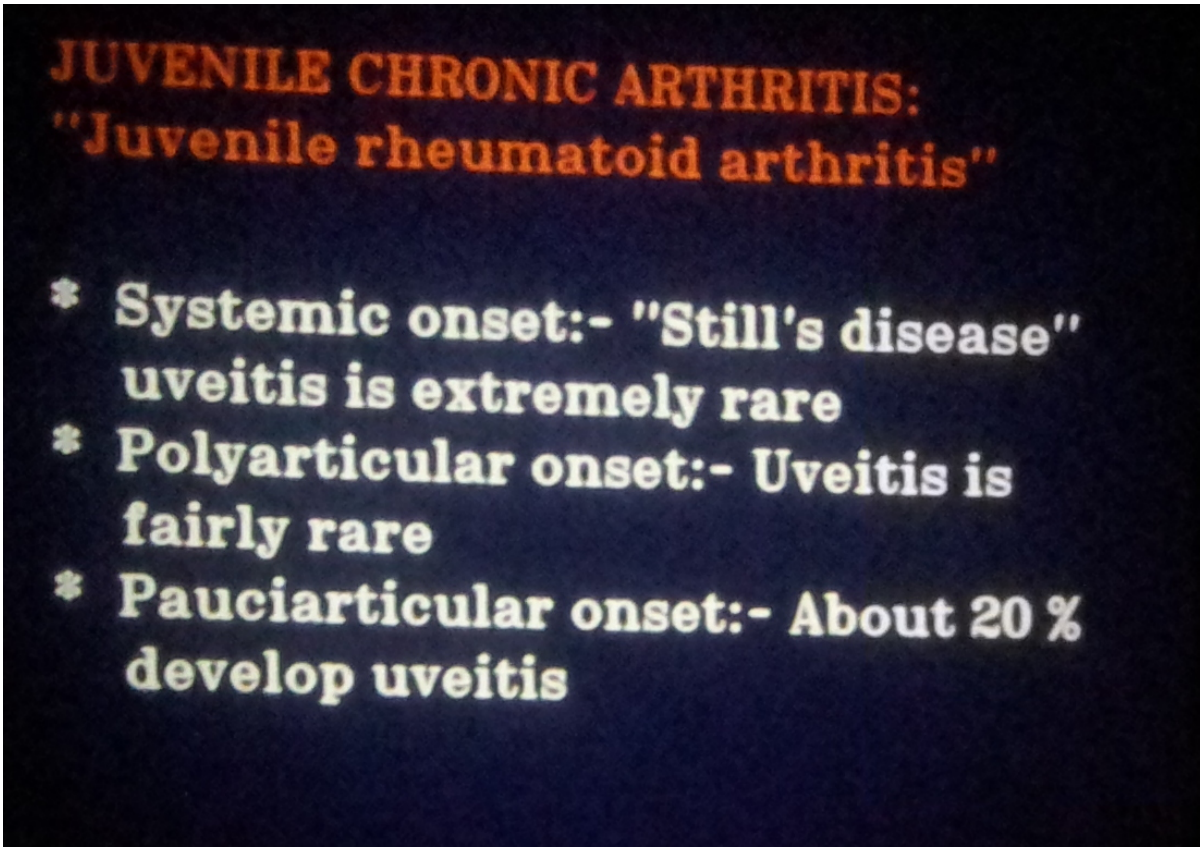
- HLA B27



History: young man with acute recurrent non-granulomatous anterior uveitis.

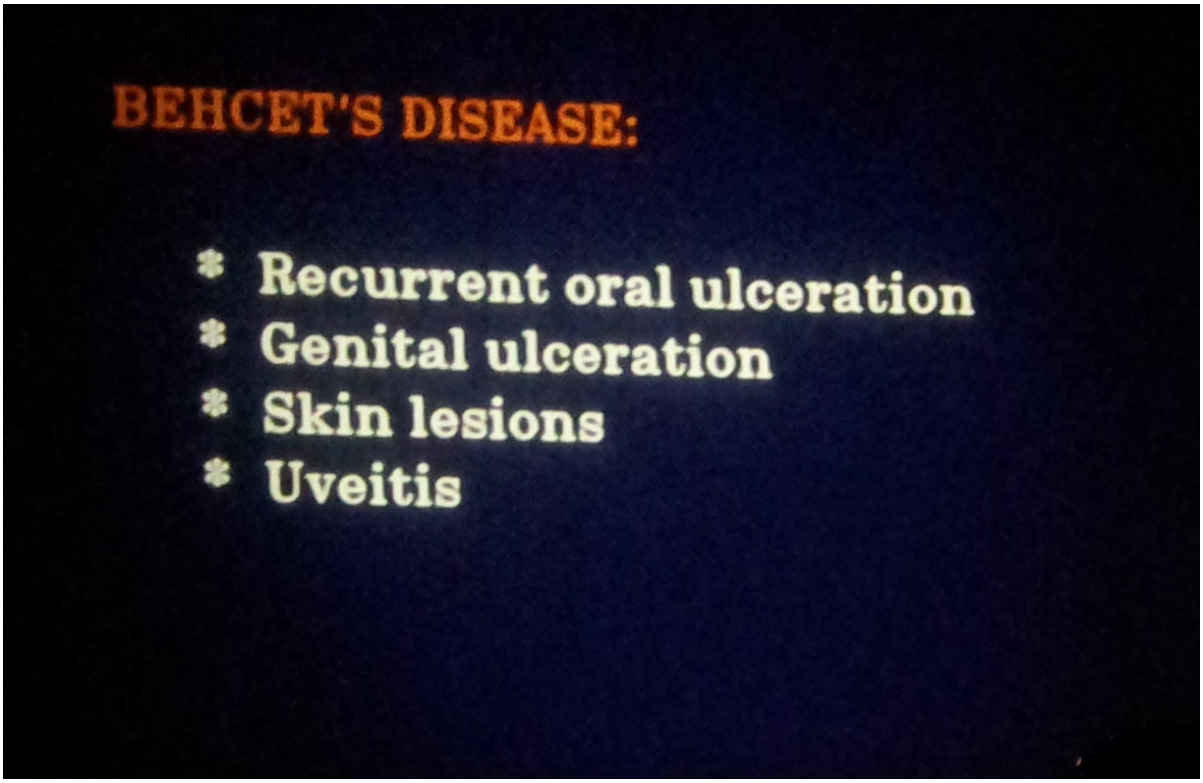
- ask if he has lower back pain which is worse in the morning if he says yeas, then your top DD should be ankylosing spondylitis
- confirm the diagnosis with :
  HLA B27 detection
  X-ray of sacroiliac joints

12-JUVENILE CHRONIC ARTHRITIS :
Seronegative



- girls are more prone.
- If the child get the disease before the age of 4 the risk of eye involvement is high.
- Associated with positive antinuclear antibody which increases the risk of eye involvement.
- In still's disease: the child will have fever, rash and pericarditis
  Uveitis here is very rare.
  In polyarticular onset where 5 or more joints are affected, uveitis is rare as will.
- In pauciarticular onset where 4 or less joints ar involved commonly ankle and rest the chance of uveitis is very high reaches 20%.
- If you are a pediatrician and you diagnose a child wit JCA, you should send him to an ophthalmologist because he might be having uveitis and asymptomatic and this can lead to blindness.

13-BEHCET'S DISEASE:



- common in the silk road
- most common in turkey.
- Diagnosed clinically :
  To diagnose it you should have :

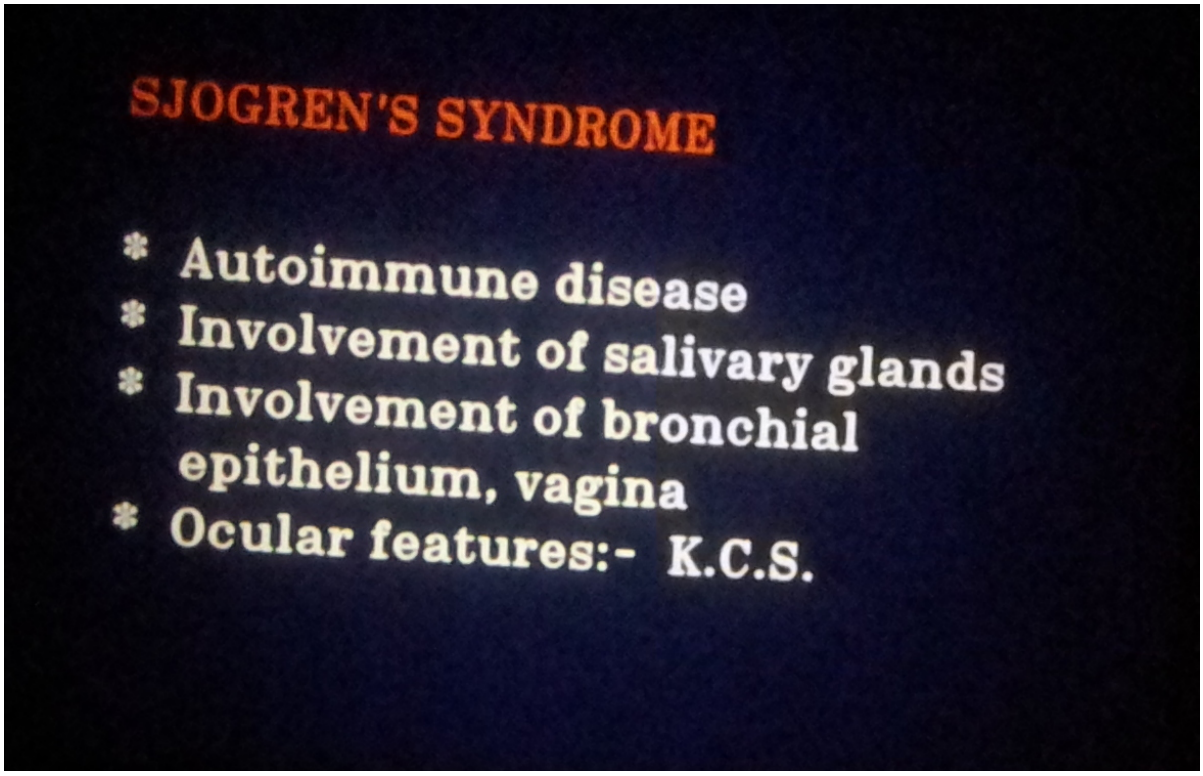
➢ Recurrent oral ulcers + two of the following

1. genital ulcers
2. skin lesions
3. uveitis
4. positive Behcet's test

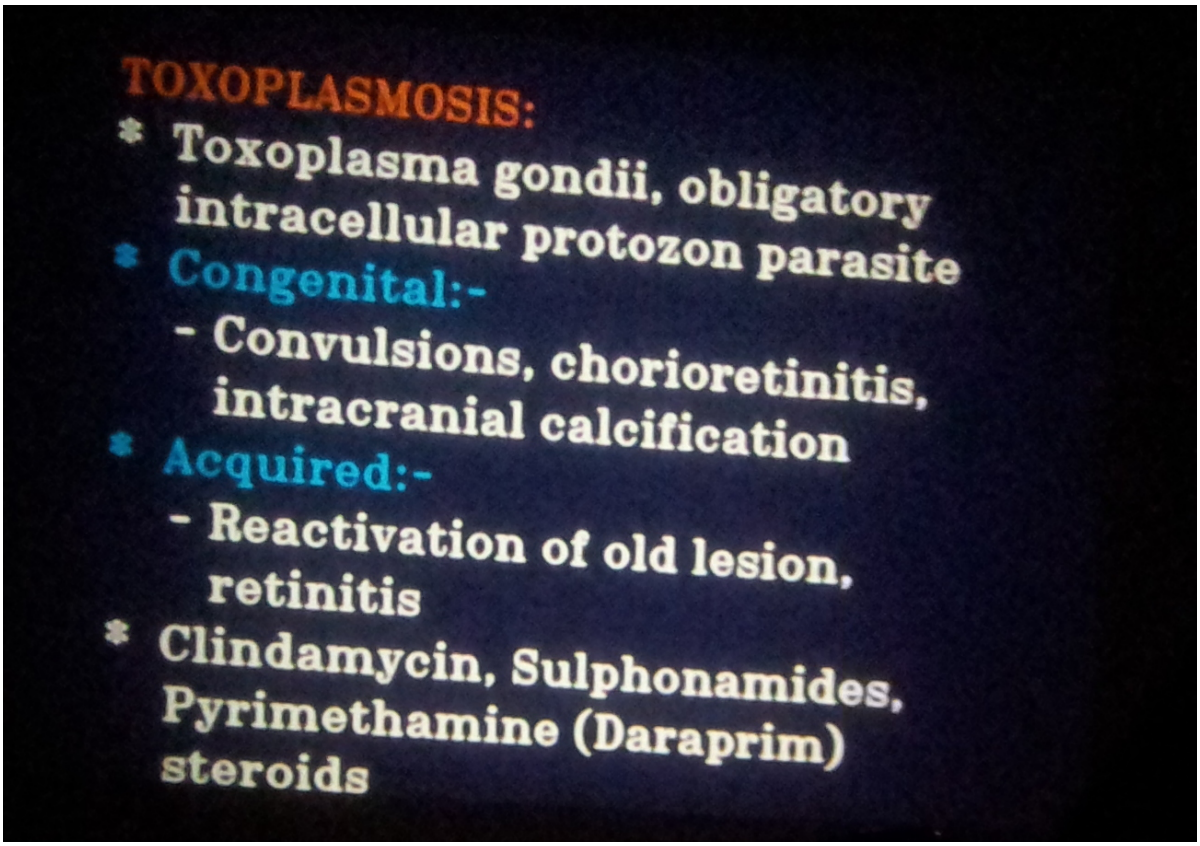
- Behcet's uveitis is a blinding disease if not treated it causes sever retinal vasculitis attacks that destroys part of the retina in every attack.
- Treated by: steroids (not for long time) and cyclosporine
  If no response we give stronger drugs like : infliximab.
  Infliximab is a anti tumor necrosis factor alpha .
  What do you see?

Pus collection in the anterior chamber (hypopia)
In the retina there will be vasculitis ,retinitis and hemorrhages.

14-SJOGREN'S SYNDROME:



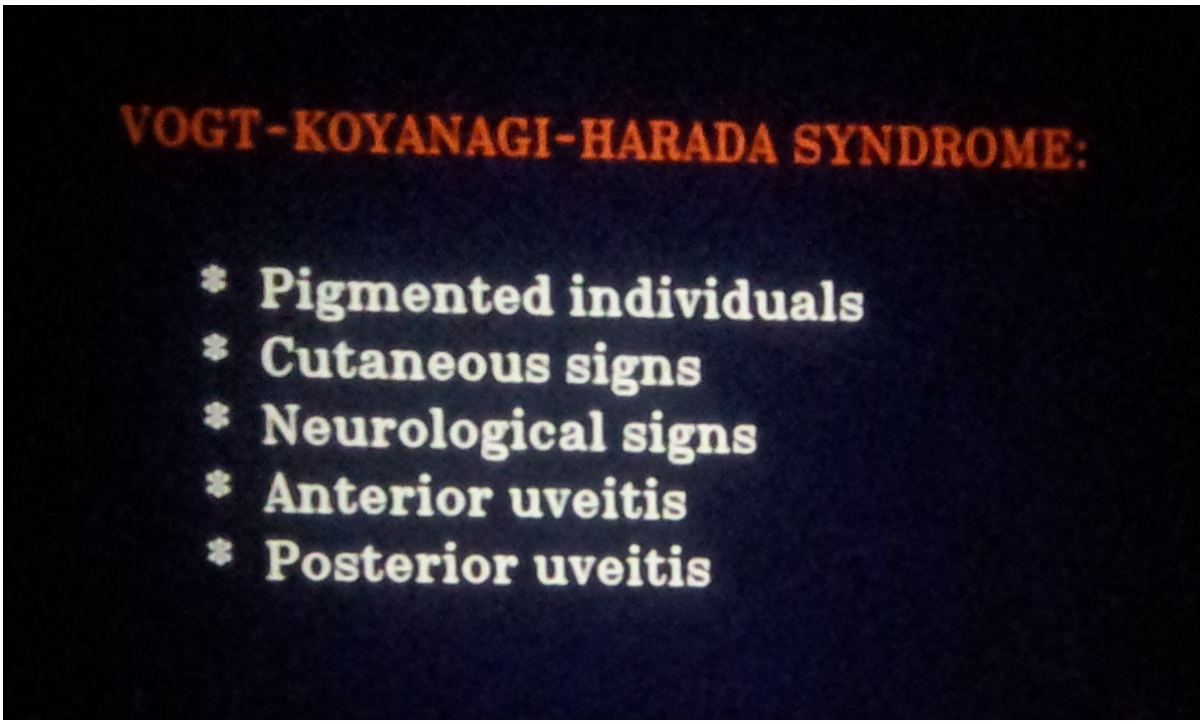
15-TOXOPLASMOSIS:



In utero infection

- If it happens In 1st trimester pregnancy should be terminated.
- If in 3rd trimester the baby will have cerebral calcifications and cororetinal scars.
- Drugs to treat:
  Sulfadiazine, clindamycin, azithromycin,.. etc.
  You can add systemic steroids.

16-Vort-Kayanagi-Harada disease:



- Autoimmune disease with HLA DR4
- 2nd most common cause of eye inflammation .
- common in pigmented people and rare in Caucasians.
- autoimmune lymphocytes attack melanin containing structures:
  - skin causing vitligo
  - hair causing alopecia
  - lashes causing poliosis
  - meninges causing sever headache
  - inner ear causing deafness
  - eye causing uveitis
- patient will have exudative retinal detachment --> retinal elevation
- irregular pupil due to posterior synechia.
- Treatment : large dose of steroids for at least 1 year

- Healed eye will have depigmentation of the fundus.

17-Sickle cell disease:

Sickles RBCs will occlude the peripheral retinal circulation causing retinal ischemia then neovascularization will happen and this will put the eye at risk for vitreous hemorrhage and tractional retinal detachment .

Treatment : as in diabetes we apply focal laser and we may need vetrioctomy.

18-HYPERTENSION:

As a result of poor control of hypertension .increase light reflex, cotton wall spots, hard exudates (fan shaped) Nipping of the retinal veins, edematous of optic disc, copper white arteritis.

19-GAINT CELL ARTRITIS :

- Affect elderly >60 years
- Affect large and medium sized vessels.
- Sudden visual loss due to ischemic optic neuropathy (infarction of optic nerve)
- Gangrene of the skull may happen as well.
- Pale disk swelling.
- Do:
  - ESR
  - CRP
  - Temporal artery biopsy
- Patient usually loss vision in one eye suddenly .
- Give large does of steroid to protect the other eye
- the affected eye will be lost at the time of presentation

THANK YOU