

Screening is by SEROLOGY (ELEVATED IgA Abs.)

followed by DUODENAL BIOPSY (which shows the following changes)

U

UWORLD IMAGES

08:48



U

UWORLD IMAGES

08:48

note the "Intra-Epithelial Lymphocytes + Plasma Cell Infiltration"

which along with :

1. Crypt Hyperplasia
2. Villous Atrophy

are classical Duodenal Biopsy findings of

CELIAC DISEASE.

which classically presents in a child of 6–24 months of age when weaned off breast milk and introduced with gluten containing diet.

Screening is with :-

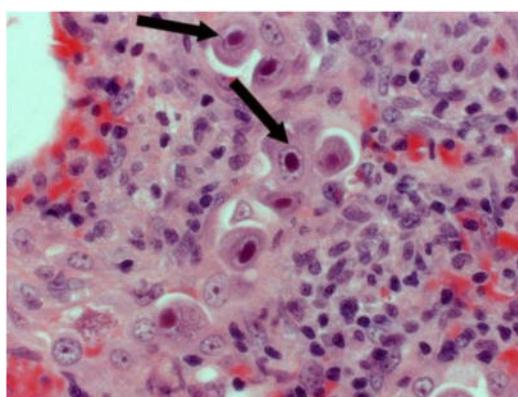
IgA anti- Endomysial + anti – tissue transglutaminase Ab

followed by confirmation with biopsy.

U

UWORLD IMAGES

08:48



UWORLD IMAGES

08:48

U

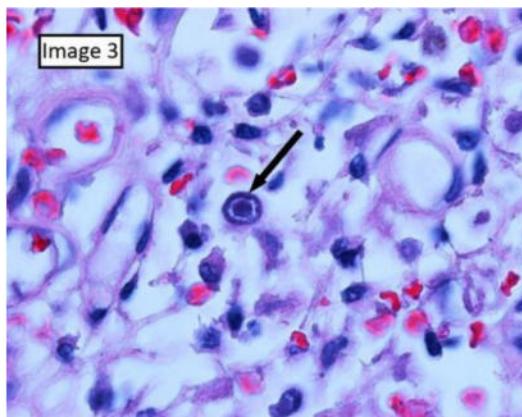
"(basophilic) Intra-Nuclear Inclusions" seem in CMV Infections.

OWL-EYE Appearance.

U

UWORLD IMAGES

08:49



U

UWORLD IMAGES

08:49

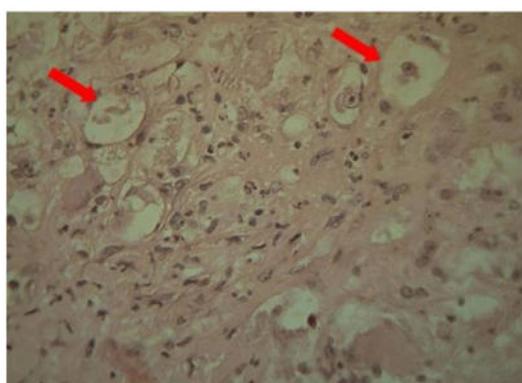
"(basophilic) Intra Nuclear Inclusions" seen in CMV Infections.

OWL-EYE Appearance

U

UWORLD IMAGES

08:49



U

UWORLD IMAGES

08:49

"Hepatocyte Swelling with wispy/clear cytoplasm" – BALLOONING DEGENERATION (seen in necrotic hepatocytes)

along with

MONOCYTE INFILTRATE and

COUNCILMAN BODIES (seen in apoptotic hepatocytes, mediated by CD8+ T cell mediated)

(eosinophilic round shrunken hepatocytes)

seen in Hepatitis Infection.

Hepatitis A :-

h/o travel outside America (water borne disease)

with

PRODROMAL S/S for around a Week

(fever, N/V, malaise, anorexia, RUQ abd. pain)

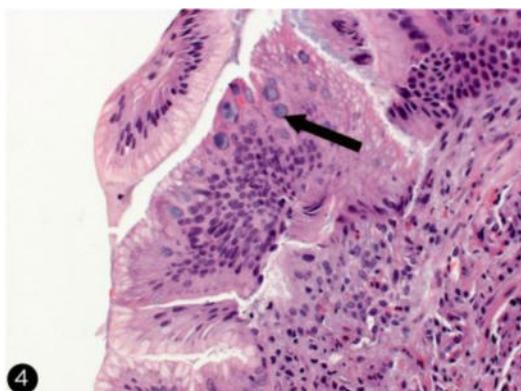
Cholestasis S/S

(jaundice, pruritus, dark urine and acholic stools)

U

UWORLD IMAGES

08:49



④

U

UWORLD IMAGES

08:50

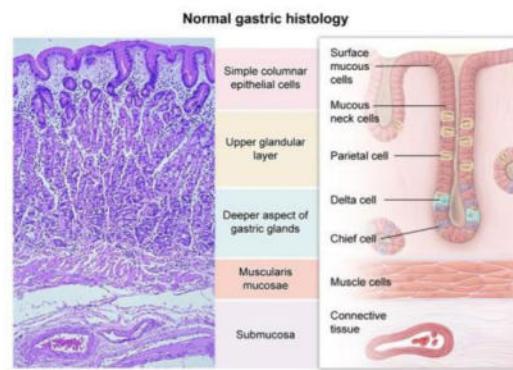
"Goblet Cells" seen in Intestinal Columnar Epithelium at the Lower Esophagus.

BARRETT'S Esophagus.

U

UWORLD IMAGES

08:50

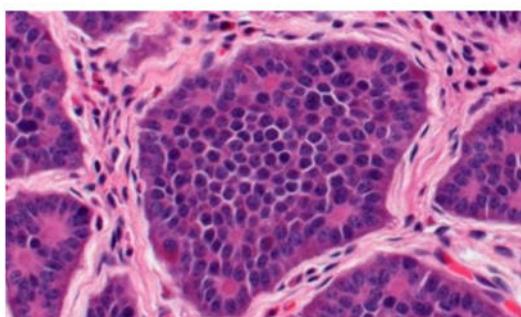


©UWorld

U

UWORLD IMAGES

08:50



U

UWORLD IMAGES

08:50

"cells of uniform shape and size/

Small Round Cells which has eosinophilic cytoplasm (not seen in this image) and Round-Oval Stippled Nucleus"

that are of NeuroEndocrine Origin.

These cells upon Electron Microscopy contains dense core granules which contain Vasoactive/Bloactive amines (serotonin, bradykinin and histamine).

Carcinoid Tumors are most commonly found in GIT (small intestine, rectum and appendix).

They are slow growing.

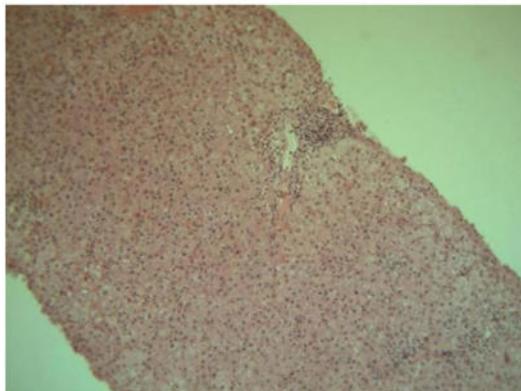
Next common location is in BrochoPulmonary System.

Causes symptoms only when they metastize to Liver.

U

UWORLD IMAGES

08:50



U

UWORLD IMAGES

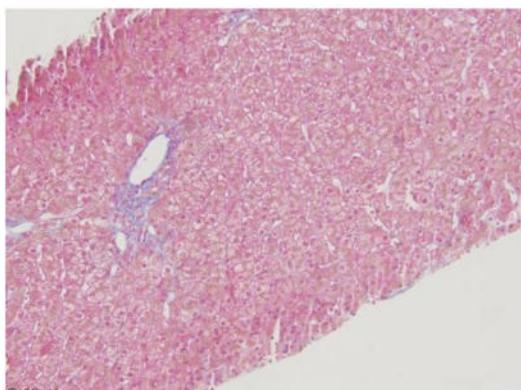
08:50

"Inflammatory Mononuclear Infiltrates" in the Peri-Portal Region seen in Viral Hepatitis which may extend to the Centri-Lobular Zone.

U

UWORLD IMAGES

08:51



U

UWORLD IMAGES

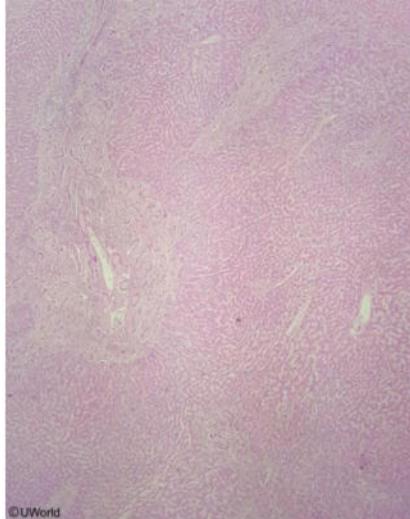
08:51

"Peri Portal Iron Deposition" on Hemochromatosis due to exposure to Iron Rich blood coming from Portal Vein due to abnormally increased Iron Absorption using DMT on the Baso-Lateral Surface of Enterocytes.

U

UWORLD IMAGES

08:51



UWORLD IMAGES

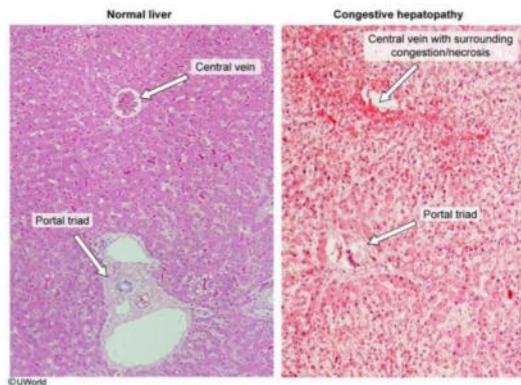
08:51

"Peri-Ductal Fibrosis"/ destruction of Bile Ducts (Zone 1) seen in Primary Biliary Cirrhosis.

It is an Auto Immune condition resulting in lymphocytic infiltration and granuloma formation classically seen in "Middle aged Women".

UWORLD IMAGES

08:52



UWORLD IMAGES

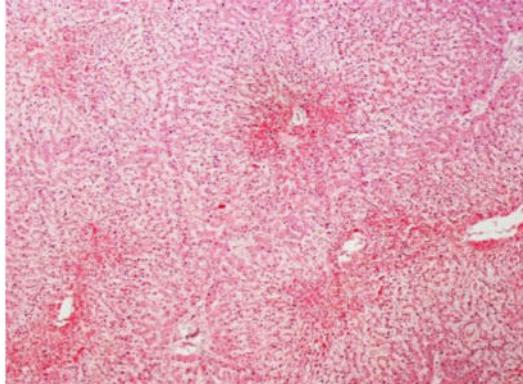
08:52

CONGESTIVE HEPATOPATHY

"Centri-Lobular (Zone 3) Congestion and Necrosis"

UWORLD IMAGES

08:52



UWORLD IMAGES

08:52

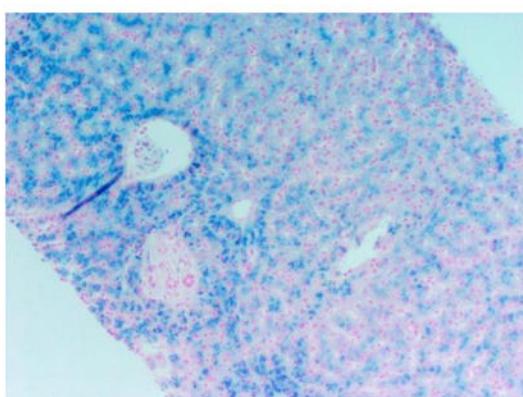
"Centri-Lobular (Zone 3) Congestion and Necrosis" with normal hepatocytes in Zone 2 and Zone 1

resulting in heterozygous gross appearance of NUTMEG Liver.

seen in patients with Right Sided Heart Failure.

UWORLD IMAGES

08:52



UWORLD IMAGES

08:52

"Red Coloured (excess) Iron Deposits" seen in Hepatic Parenchyma with Prussian Blue Stain.

Hemochromatosis ma

pt. accumulates 0.5-1 mg of Iron (due to defectively increased Iron absorption) per Year.

S/S are manifested when Total Body Iron Levels exceed >20 g, and are earlier in Men compared to Females (Menstrual Blood Loss is protective factor).

Excess Iron accumulates in Parenchymal Organs.

HEART (restrictive > dilated)

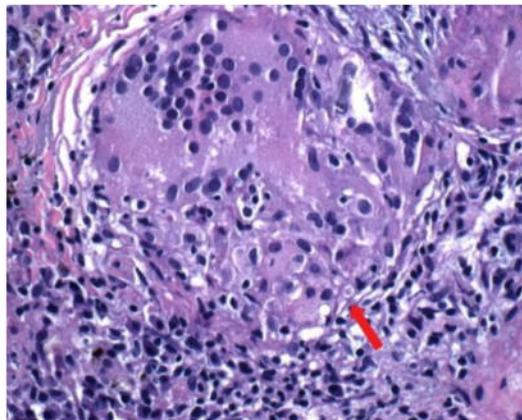
LIVER (hepatomegaly --> Cirrhosis)

Ca Pyrophosphate mediated PseudoGout @ 1st MCP.

UWORLD IMAGES

08:53

U



UWORLD IMAGES

08:53

"Non Caseating Granuloma" highly suggestive of Crohn's disease.

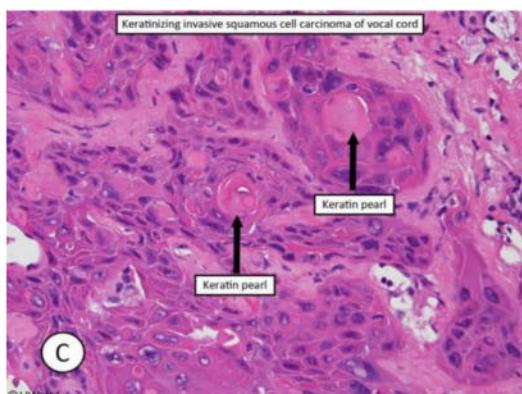
this variety of granulomas are seen in Auto-Inflammatory conditions
vs

Caseating (with granular, cheesy core consisting of lysed leucocytes and bacterial products in the centre) Granulomas which are seen in Infectious Etiologies (eg – TB, Leprosy, Syphilis, Cat Scratch Disease)

U

UWORLD IMAGES

08:53

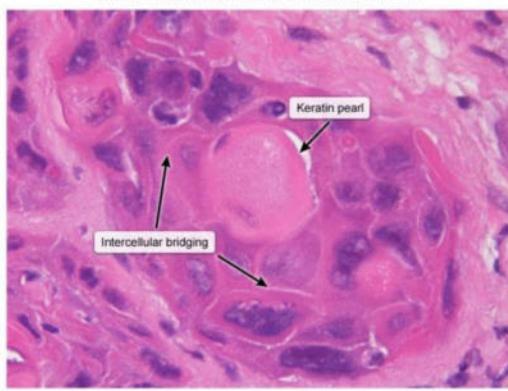


U

UWORLD IMAGES

08:53

Keratinizing invasive squamous cell carcinoma



U

UWORLD IMAGES

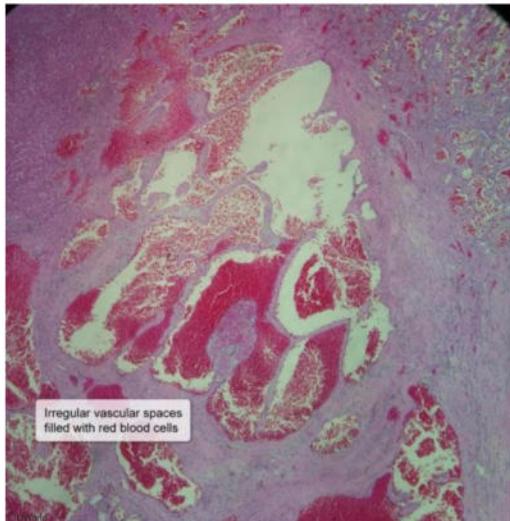
08:53

SCC of the esophagus.

U

UWORLD IMAGES

08:54



U

UWORLD IMAGES

08:54

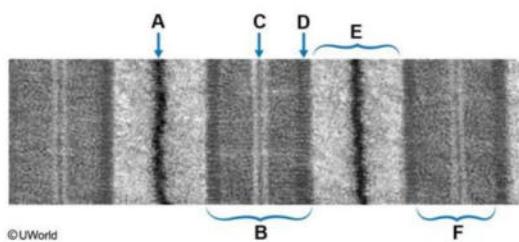
"Cavernous Vascular Space" lined by epithelial cells containing RBCs.

Hepatic Hemangioma is the most common Benign Tumor.

U

UWORLD IMAGES

08:54



U

UWORLD IMAGES

08:54

- A – "Z Line" (actin binds to scaffolding protein)
- B – "A Band" (always constant)
- C – "M Line" (myosin binds to structural protein)
- D – "overlap of actin & myosin" (b/w H-Band & I-Band)
- E – unbound ACTIN Filaments
- F – unbound MYOSIN Filaments

U

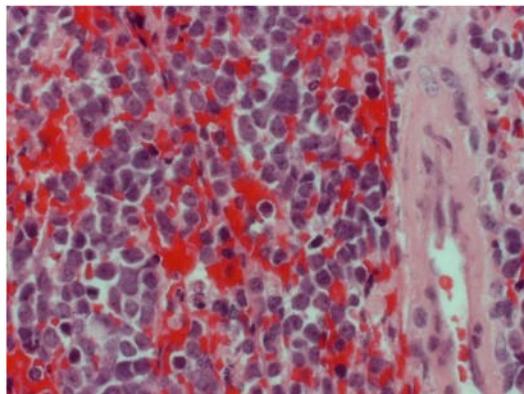
UWORLD IMAGES

08:54



"CHONDROSARCOMA"

Chondrocytes are Malignant and are found in excess Cartilagenous Matrix.



"Ewing's Sarcoma"

Neuroectodermal Origin

hence,

"Small, Round Blue Cells (similar to lymphocytes) separated by septa

&

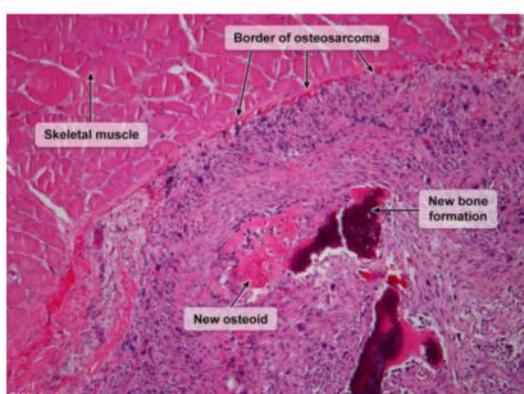
patches of hemorrhage and necrosis"

2nd M/C

Primary
Bone Tumor of
Childhood

after

OsteoSarcoma (in Metaphysis)



U

UWORLD IMAGES

08:55

osteosarcoma

involves bone Metaphysis

mutated mesenchymal OSTEOBLASTIC precursors which secrete excess Osteoid Matrix (unmineralized).

excess of spindle shaped cells forming stromal matrix.

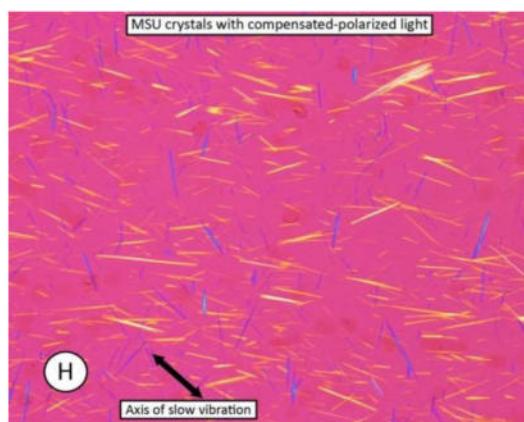
Most Common
Primary
Malignant Bone Tumor
of CHILDHOOD

2nd – Ewing's Sarcoma

U

UWORLD IMAGES

08:55



U

UWORLD IMAGES

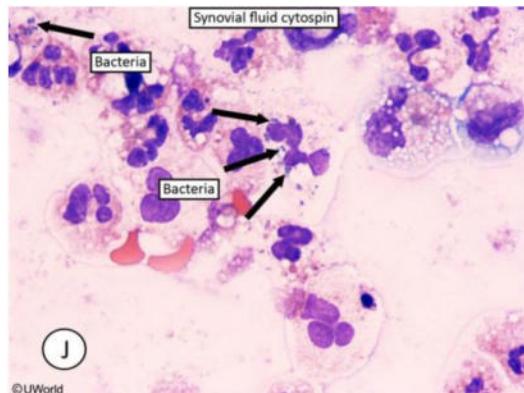
08:55

Gout

U

UWORLD IMAGES

08:55



U

UWORLD IMAGES

08:55

septic arthritis

U

UWORLD IMAGES

08:55

U



U

UWORLD IMAGES

08:56

Gout

U

UWORLD IMAGES

08:56



U

UWORLD IMAGES

08:56

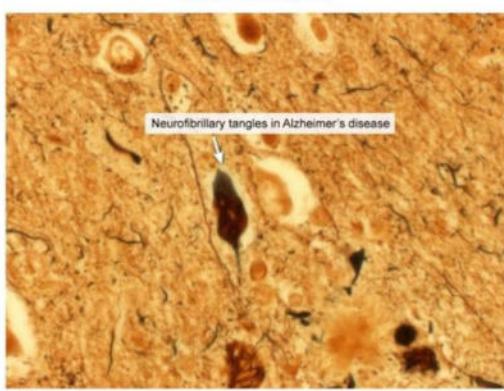
polarised microscopy showing Bright Green Birefringence in Amyloidosis.

U

UWORLD IMAGES

08:56

Alzheimer's disease



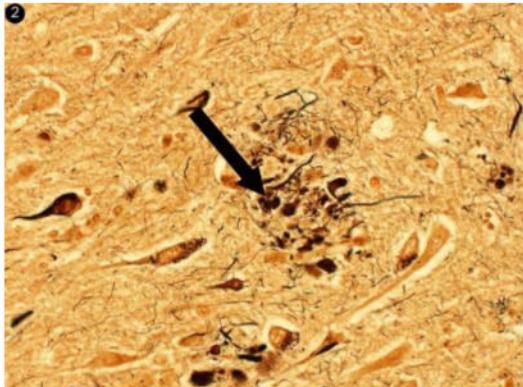
U

UWORLD IMAGES

08:56

"neurofibrillary tangles" found intracellularly composed of hyperphosphorylated Tau proteins (which normally plays role in microtubule stabilization).

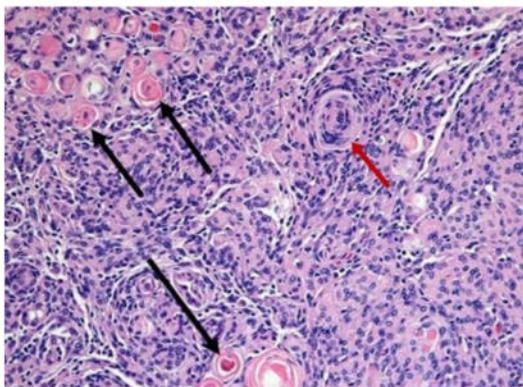
seen in Alzheimers



"Senile Neuritic plaques"

composed of extracellular A_β core surrounded by dystrophic neurons, most commonly in Medial Temporal Lobe (Hippocampus, Amygdala, Entorhinal Complex)

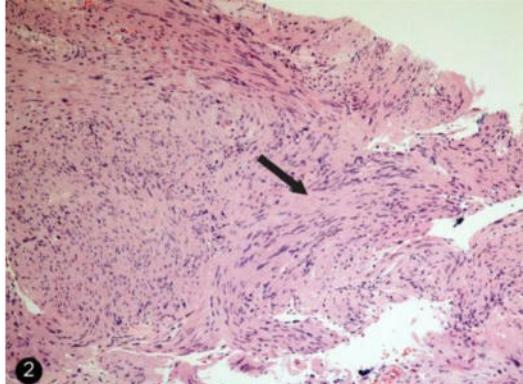
seen in Alzheimers



red arrow -> "whorled/concentrically arranged mass of spindle cells" that forms SYNCITAL NESTS which may "calcify and appear as round eosinophilic laminar structures known as PSaMMoma Bodies" (black arrows)

found in

1. Papillary Thyroid Carcinoma
2. Serous Cystadenoma of Ovary and Endometrium
3. Meningioma
4. Malignant Mesothelioma.



UWORLD IMAGES

08:57

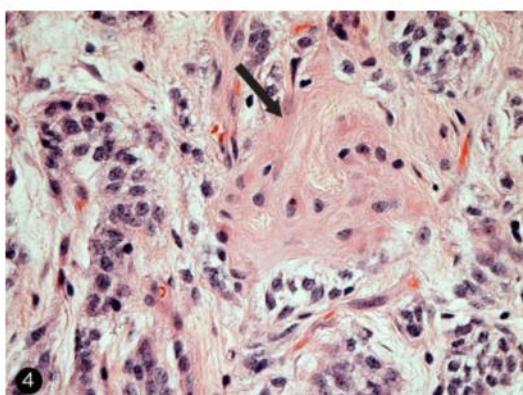
"VEROCAY BODIES" (composed of eosinophilic core)

spindle shaped cells with palisading nuclei arranged around verocay bodies.

Seen in SCHWANNOMA.

UWORLD IMAGES

08:57



UWORLD IMAGES

08:57

"Rosenthal Fibres"

eosinophilic, corckscREW fibres.....

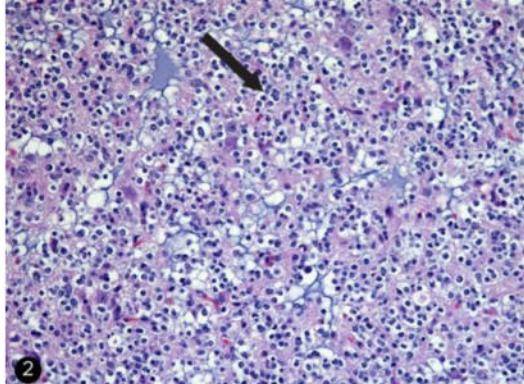
seen in Pilocytic Astrocytoma (solid+cystic)

Low Grade (most common 1 Brain tumor of childhood)

UWORLD IMAGES

08:57

U



UWORLD IMAGES

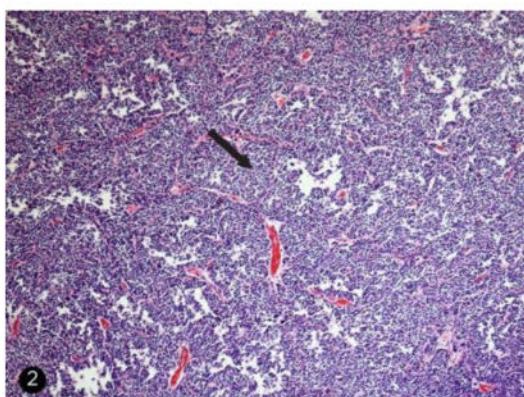
08:57

"fried egg cells" found in slow growing WHITE MATTER tumor
(oligodendrolioma)

"round nuclei surrounded by halo of clear cytoplasm"

UWORLD IMAGES

08:57



UWORLD IMAGES

08:57

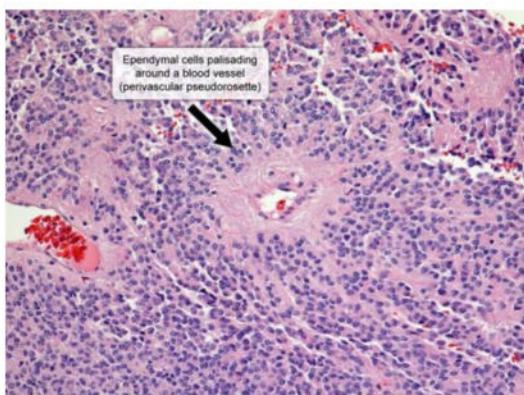
Medulloblastoma

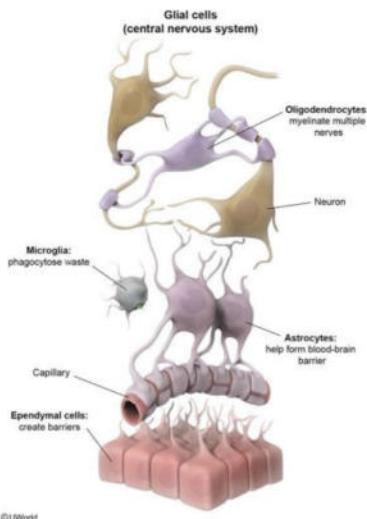
Malignant (most common) Cerebellar Tumor in Childhood.

PNET consisting of "blue coloured small, round tumor cells" with scanty cytoplasm forming HOMER WRIGHT ROSETTES.....

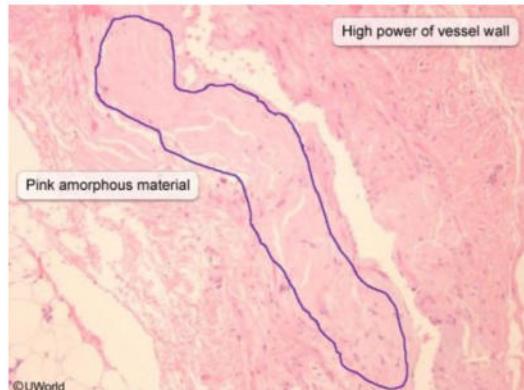
UWORLD IMAGES

08:58





©UWorld



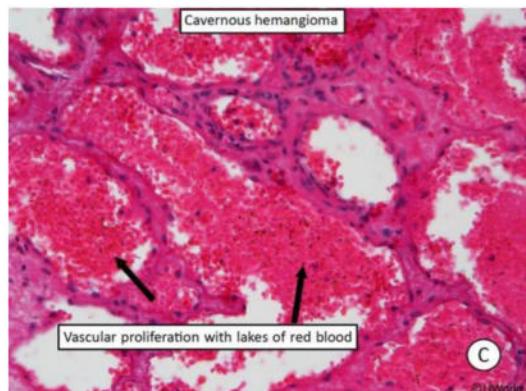
©UWorld

"Extracellular Eosinophilic AMYLOID Deposition"

in Amyloid Angiopathy

vs

Intracellular Eosinophilic Cytoplasm in case of Irreversible neuronal Injury (Red Neurons).

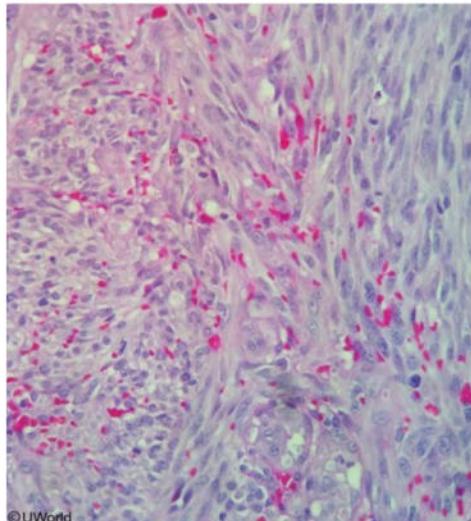


©UWorld

U

UWORLD IMAGES

08:59



U

UWORLD IMAGES

08:59

KapoSi Sarcoma (infection of HSV-8)

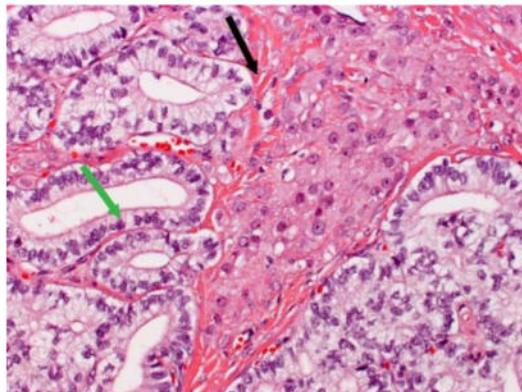
"Highly vascular Tumor containing elongated Spindle Cells"

Commonly found as – Skin Nodules, but already to GIT, Respi.

U

UWORLD IMAGES

08:59



U

UWORLD IMAGES

08:59

Sertoli Leydig Cell Tumor of Ovary :-

Rare

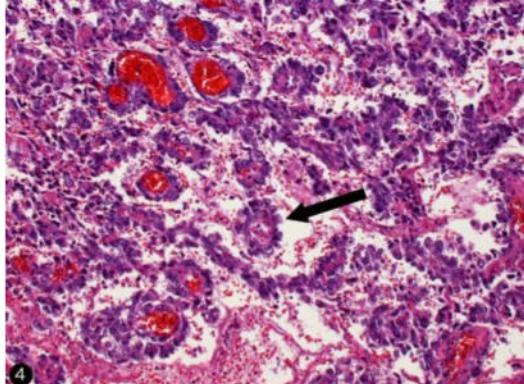
Secretes Testosterone

Histology :- resembles Testis ; tubules which are composed of Sertoli cells (green arrow) interspersed with eosinophilic Leydig Cells surrounded by fibrous stroma (black arrow)

U

UWORLD IMAGES

08:59



UWORLD IMAGES

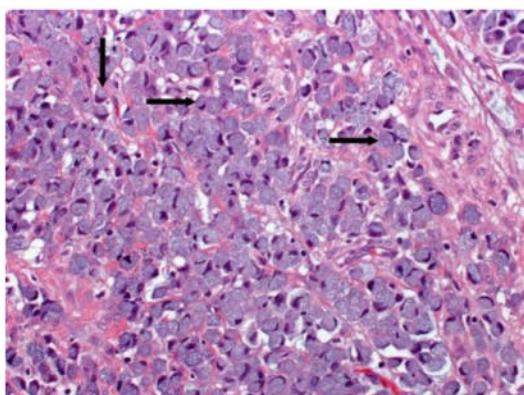
09:00

endodermal sinus tumor/ Yolk Sac Tumor

elevated AFP

UWORLD IMAGES

09:00



UWORLD IMAGES

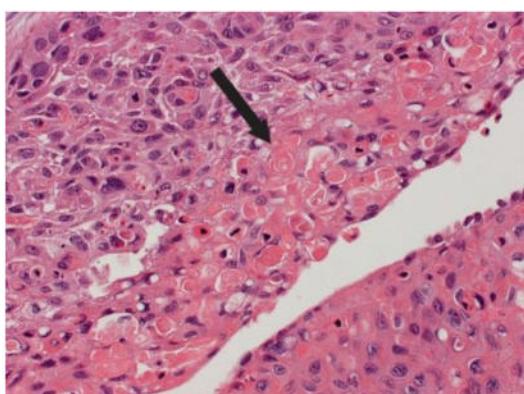
09:00

Mucin secreting signet ring cell cancer.

due to excess mucin secreted the nucleus is displaced to the periphery.
== krukenberg

UWORLD IMAGES

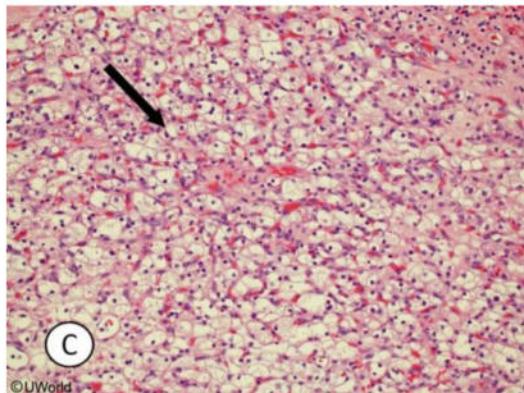
09:00



UWORLD IMAGES

09:00

Keratin pearl

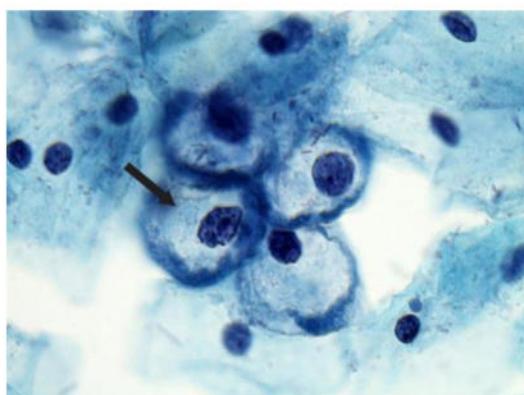


"nests of epithelial cells with abundant clear cytoplasm"

CLEAR CELL TYPE of RCC



Teratoma



Koilocyte

U

UWORLD IMAGES

09:01



U

UWORLD IMAGES

09:01

Call Exner Bodies resembles Primordial Follicles.

In the tumor (Granulosa Cell),

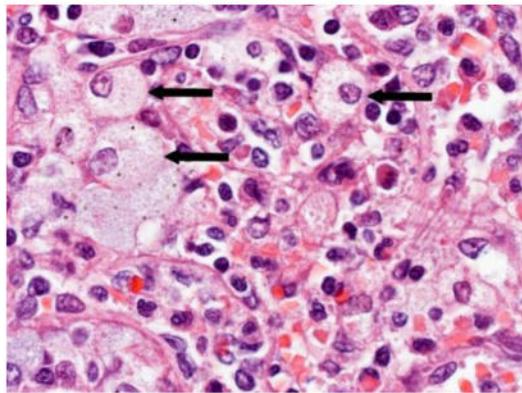
Granulosa cells are arranged haphazardly but sometimes they form Call Exner Bodies where they surround around collections of Eosinophilic fluid (hence resembling primordial follicles).

And these abnormal granulosa cells contain nuclear grooves which when seen through microscope resembles coffee beans.

U

UWORLD IMAGES

09:01



U

UWORLD IMAGES

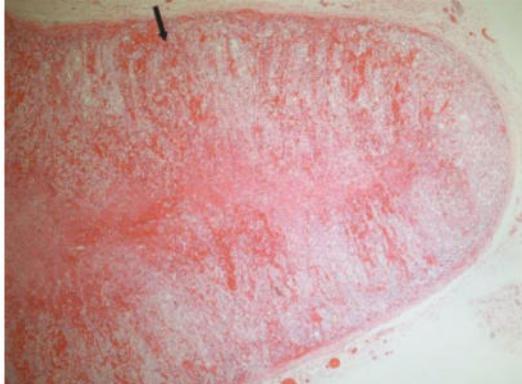
09:02

Niemann pick lipid laden macrophage

U

UWORLD IMAGES

09:02



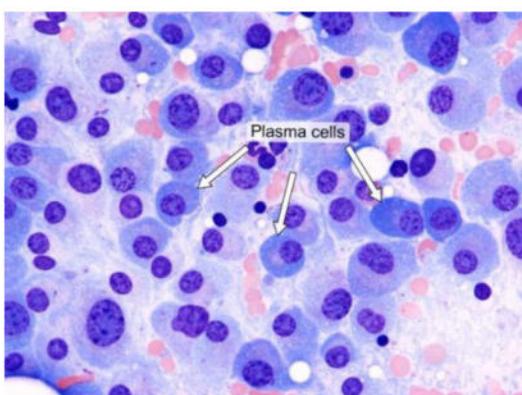
U UWORLD IMAGES

09:02

Adrenal infarction

U UWORLD IMAGES

09:02



U UWORLD IMAGES

09:02

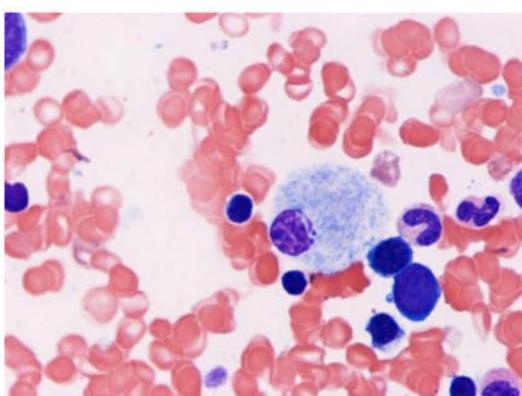
>10% in Bone Marrow Biopsy – Confirmation Test for MM

Characteristics of Plasma Cells :-

1. Clck-work Chromatin
2. Perinuclear halo – Golgi Apparatus
3. abundant basophilic cytoplasm

U UWORLD IMAGES

09:02



U UWORLD IMAGES

09:03

Gaucher's Cell – lipid laden macrophage with "crumpled tissue/newspaper" can be seen in location all over the body

LIVER

BONE MARROW

LYMPHOID TISSUES (spleen/lymph node/tonsils)

AR inheritance

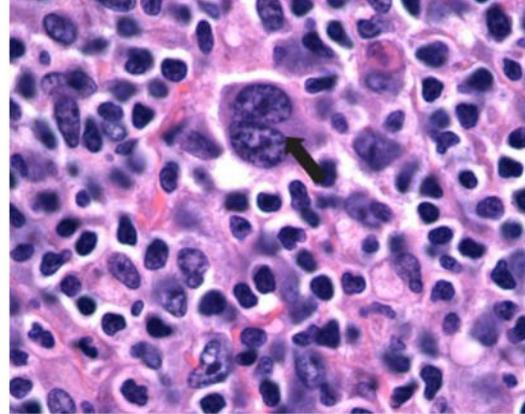
b-glucocerebrosidase deficiency resulting in glucocerebroside accumulation.

Bone Pain (due to BM invasion/inflammation)+Pancytopenia+HSM (massive splenomegaly)

U

UWORLD IMAGES

09:03



U

UWORLD IMAGES

09:03

Even though the prominent feature in this slide is the obvious RS Cell (B-lymphocyte origin) in the centre.

Just remember that, due to the cytokines produced by it , there is lymphocytic infiltrates.

Characteristics which will help to identify the lymphocytes are :-

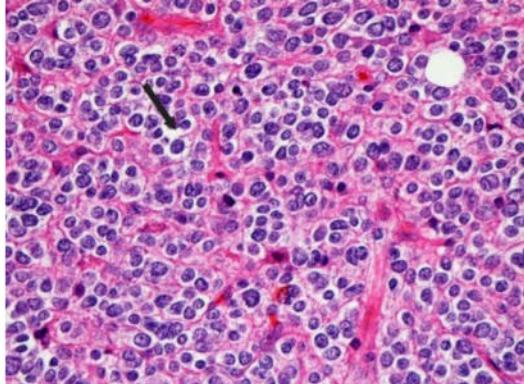
"small cell size, with DARK, ROUND nuclei and a small rim of cytoplasm i.e. (high nucleus to cytoplasm ratio)"

all these happens in LYMPHOID TISSUE.

U

UWORLD IMAGES

09:03



UWORLD IMAGES

09:03

arrow pointing "fried egg appearance" – uniform cells surrounded by clear cytoplasm, interspersed with anastomosing Capillaries in "chicken wire appearance". (red coloured)

characteristic of OLIGODENDROGLIOMAS.
rare tumor of childhood.

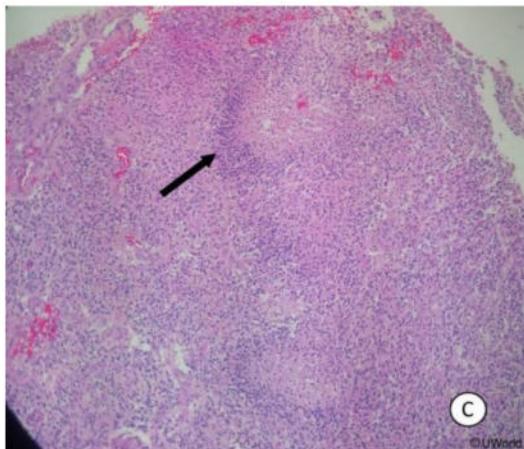
On CT –

"well-demarcated Calcifications can be found in frontal lobe"

U

UWORLD IMAGES

09:03



U

UWORLD IMAGES

09:03

"Pleomorphic pseudopalisading cells" surrounding area of necrosis

found in GBM. tumor arising from GFAP +ve Astrocytes.
adult counterpart of Pilocytic Astrocytoma in Children.

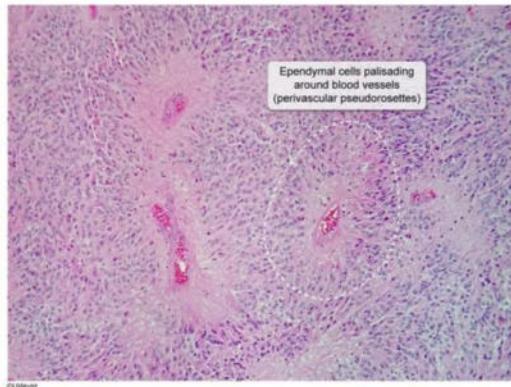
usually located in the Cerebral Hemispheres crossing the Corpus Callosum (hence, BUTTERFLY TUMOR).

Poor Prognosis.

U

UWORLD IMAGES

09:04



U

UWORLD IMAGES

09:04

"perivascular pseudorosettes"**found in EPENDYMOMA.**

rare brain tumor arising from Ependymal Lining of 4th Ventricle.
cause blockage of CSF flow --> Hydrocephalus.

Tumor of adult.

U

UWORLD IMAGES

09:04



U

UWORLD IMAGES

09:04

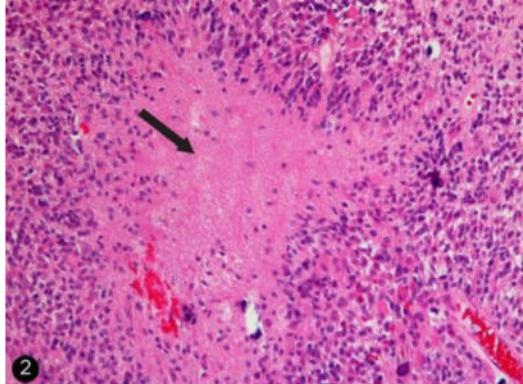
a patchy brownish discolouration affecting the neck and skin folds –
ACANTHOSIS NIGRANS.

DM-2

U

UWORLD IMAGES

09:04



UWORLD IMAGES

09:04

"an area of necrosis (arrow) surrounded by columns of tumor cells (pseudopalisading necrosis)."

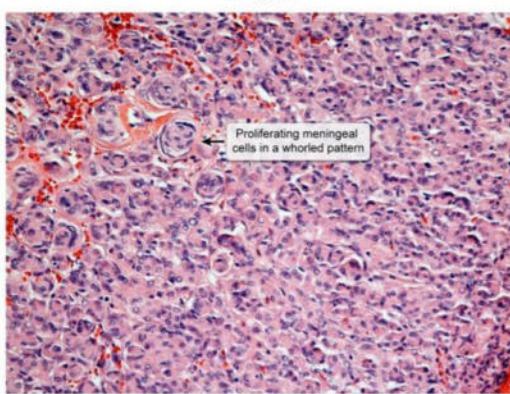
Capillaries are seen at the periphery.

Both features are characteristic of GBM, the M/C Primary brain neoplasm in ADULTS.

UWORLD IMAGES

09:04

Meningioma



UWORLD IMAGES

09:04

"whorled pattern of growth"

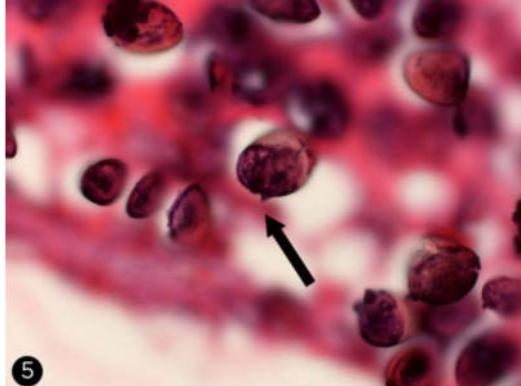
In Meningiomas.

Laminar calcifications called "Psammoma Bodies" are often present.

UWORLD IMAGES

09:05

U



U

UWORLD IMAGES

09:05

S. mansoni (with lateral spine)

schistosomiasis, endemic in sub-Saharan Africa

bathing in freshwater containing contaminated snails --> penetrate intact human skin -->

migrate to the liver --> mature into adult worms -->

travel through the portal system --> mesenteric venules (S. mansoni and

S. japonicum) or the venous plexus of the bladder (S. hematobium)

release eggs --> excreted in feces and urine.

in response to eggs --> granulomatous inflammatory response -->

GIT

diarrhea, weight loss, anorexia, anemia (S. mansoni and S. japonicum)

BLADDER

terminal hematuria (S. hematobium)

PERIPORTAL SYSTEM

(portal hypertension and splenomegaly ; NOTE :- no h/o alcoholism)

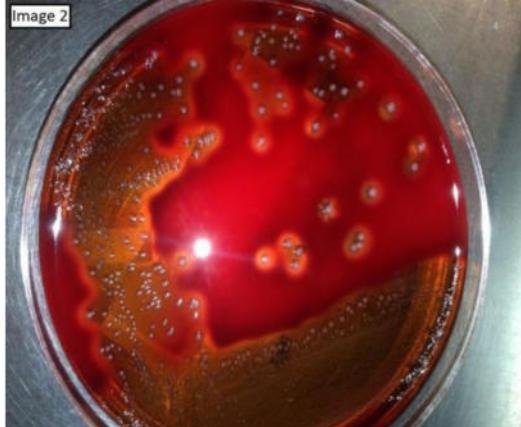
Eosinophilia

Rx :- Praziquantal

U

UWORLD IMAGES

09:05



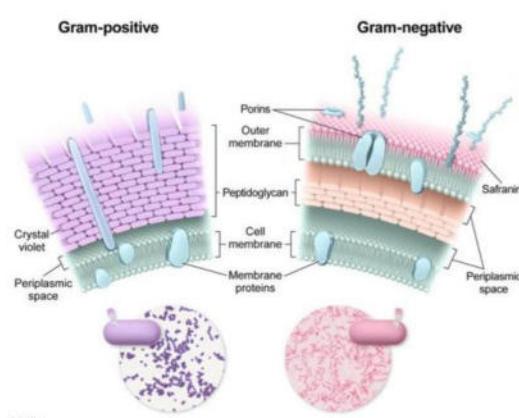
UWORLD IMAGES

09:05

"broad zone of complete hemolysis"

UWORLD IMAGES

09:06



UWORLD IMAGES

09:06



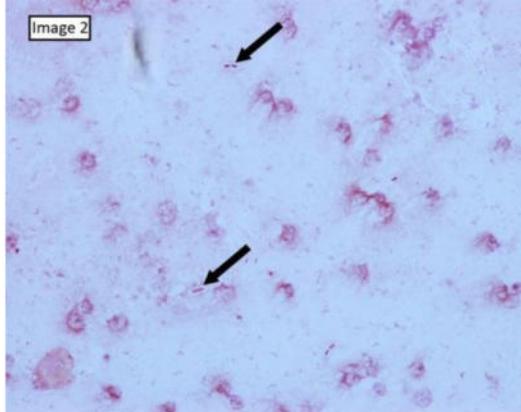
UWORLD IMAGES

09:06

mucoid growth of Klebsiella on blood agar.

UWORLD IMAGES

09:06



U

UWORLD IMAGES

09:06

thick capsule is seen as a clear zone on gram stain.

(Klebsiella Pneumonia)

causes pneumonia in alcoholics and in nosocomial settings,

those with impaired defense (infants, elderly, alcoholics)
immunosuppression (esp. neutropenics)

capsule helps it to colonize the oropharynx --> microaspirations when pt. is sleeping, in supine position -->
classically affects the posterior segments of the upper lobes of right lung -->
necrosis and inflammation -->
productive red currant jelly sputum -->
early abscess formation.

U

UWORLD IMAGES

09:06



U

UWORLD IMAGES

09:06

Partial hemolysis on Blood agar

Strep. Pneumonia.

causes lobar consolidation.

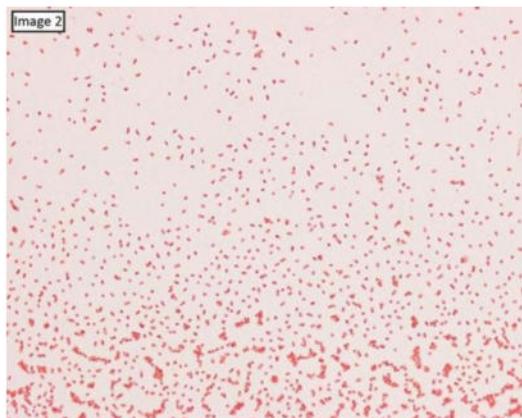
Other bacterial causes of lobar consolidation are :-

1. H. Influenzae

2. Moraxella Catarrhalis
3. Staph. Aureus

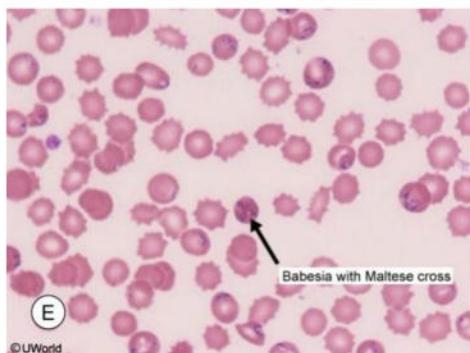
UWORLD IMAGES

09:06



UWORLD IMAGES

09:07



UWORLD IMAGES

09:07



UWORLD IMAGES

09:07

Rhabditiform Larvae in stool --> for diagnosing

Strongyloides stercoralis.

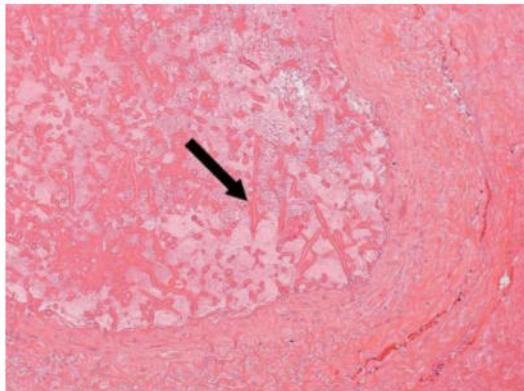
Roundworm infection caused by penetration of infectious Filariform larvae from soil, causing

Larvae Currens

U

UWORLD IMAGES

09:07



U

UWORLD IMAGES

09:07

acute angled branching hyphae of

Aspergillus

causes

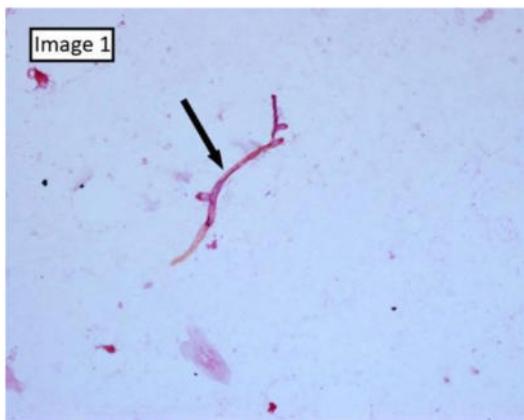
Angioinvasive Pneumonia

(Classic triad of Fever, Hemoptysis and Pleuritic Chest pain in Immunocompromised)

U

UWORLD IMAGES

09:07



U

UWORLD IMAGES

09:07

Rhizopus spp causing

rhino-orbito-cerebral infection,
pulmonary

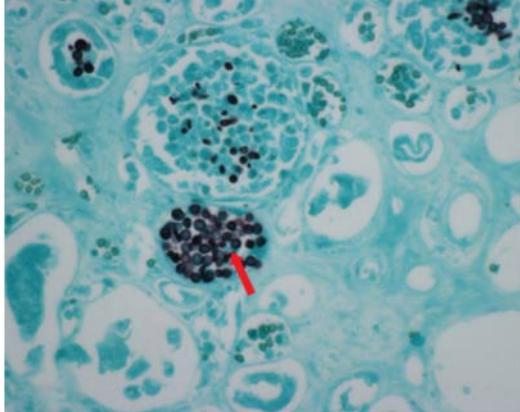
but in immunocompromised.

Broad branching hyphae with rare septations

U

UWORLD IMAGES

09:07



UWORLD IMAGES

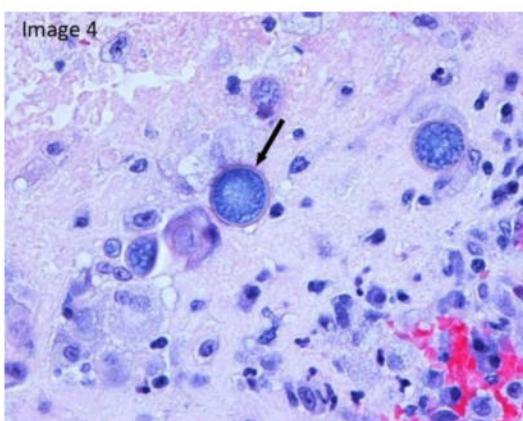
09:07

small, ovoid and budding yeast cells hiding within macrophages

Histoplasma capsulatum

UWORLD IMAGES

09:08



UWORLD IMAGES

09:08

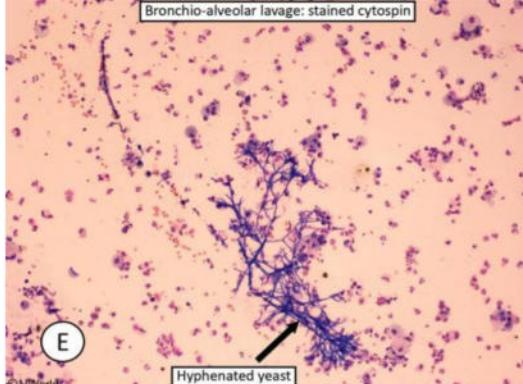
Large, irregularly sized, thick walled spherules containing small, round endospores

Coccidioides immitis

Lung disease in immunocompetent
and
disseminated mycosis in immunocompromised.

UWORLD IMAGES

09:08



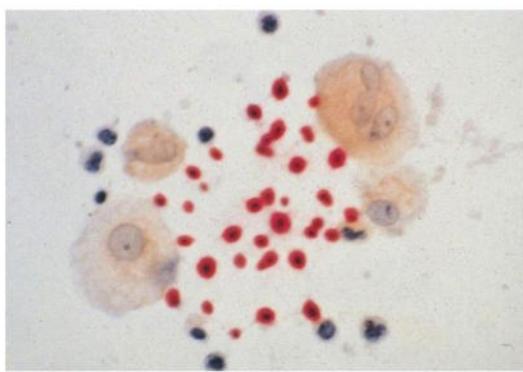
UWORLD IMAGES

09:08

Aspergillus

UWORLD IMAGES

09:08



Displayed with permission from Springer Healthcare Ltd. © Copyright 1996, 2004 by Current Medicine

UWORLD IMAGES

09:08

Cryptococcus Neoformans

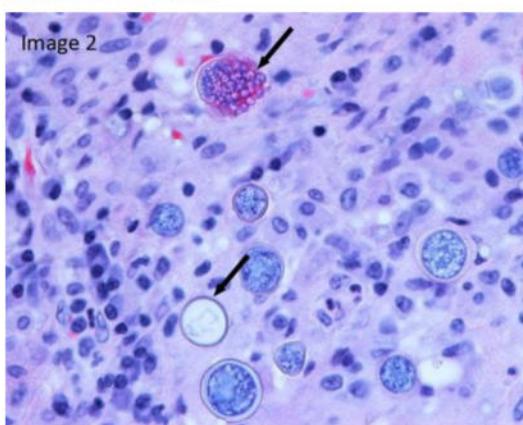
(a narrow budding yeast with peripheral clearing/halo)

Mucicarmine staining of BAL (for lung infection)

India Ink staining of CSF (for Meningeal Infection)

UWORLD IMAGES

09:08



UWORLD IMAGES

09:08

U

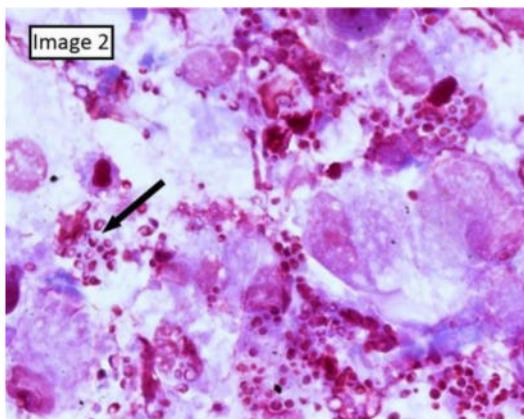
Pulmonary Disease in normal

disseminated disease in Immunocompromised – coccidio

U

UWORLD IMAGES

09:09



U

UWORLD IMAGES

09:09

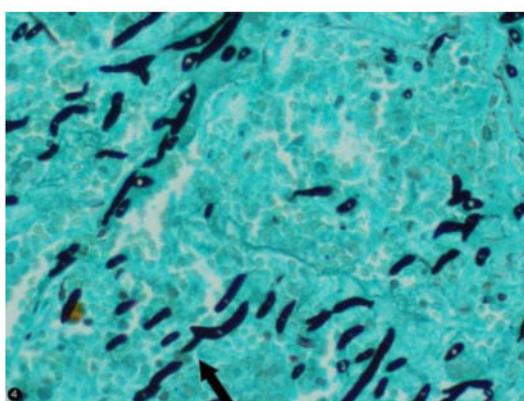
"small oval yeast forms hiding in macrophages" (smaller than RBCs)

Histoplasma Capsulatum

U

UWORLD IMAGES

09:10



U

UWORLD IMAGES

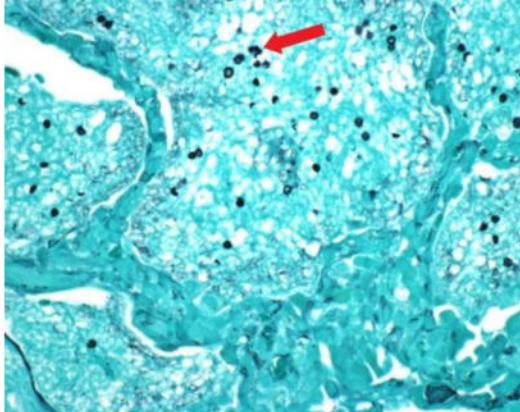
09:10

Aspergillus (note the acute angled hyphae) on Silver staining

U

UWORLD IMAGES

09:10



UWORLD IMAGES

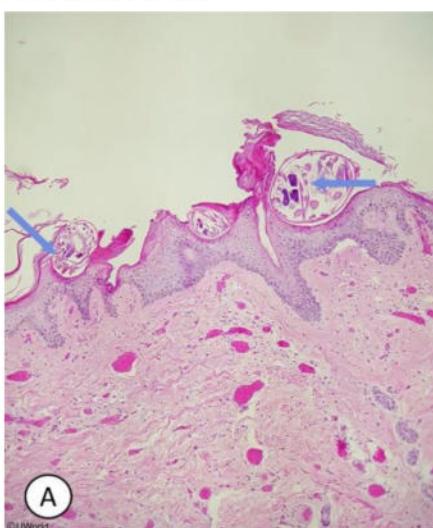
09:10

Cell Wall of *P. jirovecii* on Methamine Silver staining.

U

UWORLD IMAGES

09:10



UWORLD IMAGES

09:10

Internal organs of Mites causing Scabies.

U

burrow under the epidermis (note in the stratum corneum) -->

evoke a delayed-type 4 HST reaction to mite feces and eggs.

Classic scabies (in immunocompetent host)

mild mite burden (10–15 mites) – small erythematous papules on the sides/web of fingers, wrists, elbow and genitalia.

+

excoriations from scratching and
burrows (thin serpiginous red tracks)

(in immunocompromised host eg :- advanced AIDS)

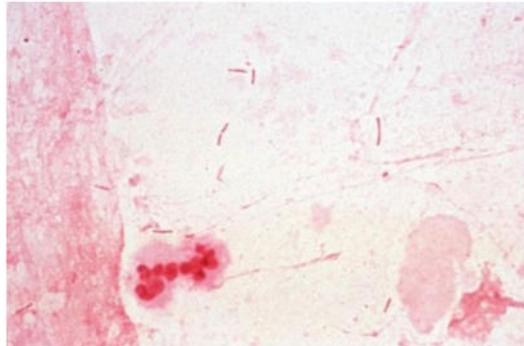
thousands or millions of mites – still mild pruritus (muted inf. response)

BUT

several erythematous patches with scaling and crusting.

UWORLD IMAGES

09:10



UWORLD IMAGES

09:10

note the "gram negative RODS" which are lactose non-fermenting and Oxidase +ve

in a BURNS pt. due to

1. loss of barrier protection by the skin
2. Immune dysfunction
3. no blood blow to the necrotic tissues

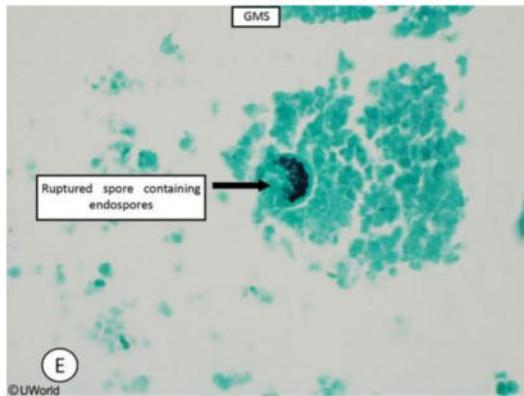
pt are more likely to develop Infections.

gram +ve (Staph, enterococci)

gram -ve (Pseudomonas, E. Coli, Klebsiella, acinetobacter)

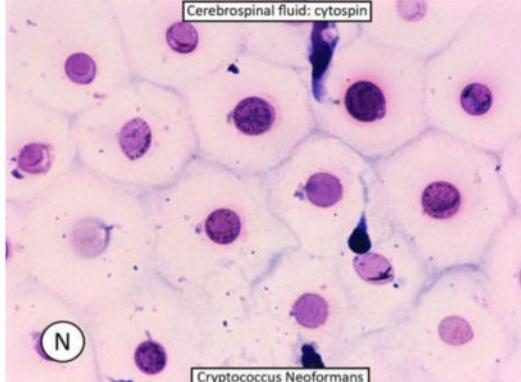
UWORLD IMAGES

09:11



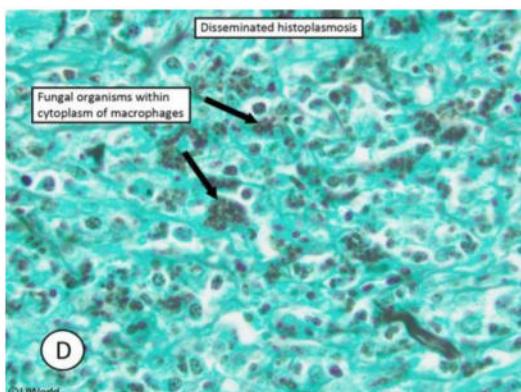
UWORLD IMAGES

09:11



UWORLD IMAGES

09:11



UWORLD IMAGES

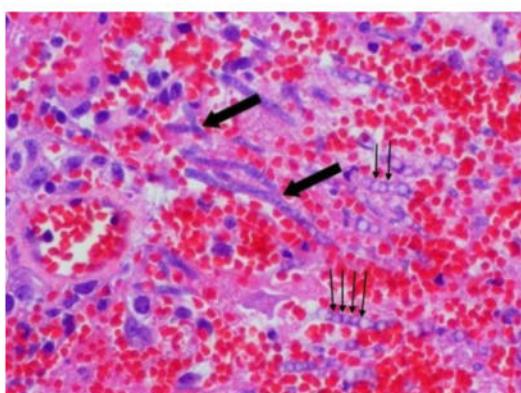
09:11

Neurocysticercosis	
Microbiology	<ul style="list-style-type: none"> Ingestion of Taenia solium (pork tapeworm) eggs excreted in feces of human carriers
Clinical presentation	<ul style="list-style-type: none"> Common in Central & South America, sub-Saharan Africa, Asia Prolonged incubation (months to years) Seizures, focal neurologic symptoms, intracranial hypertension (CSF obstruction)
Diagnosis	<ul style="list-style-type: none"> CT/MRI - cysts, scolex Eosinophilia, ↑ESR
Management	<ul style="list-style-type: none"> Antiparasitic therapy (albendazole)

CSF = cerebrospinal fluid, ESR = erythrocyte sedimentation rate.
©UWorld

UWORLD IMAGES

09:11



UWORLD IMAGES

09:11

U

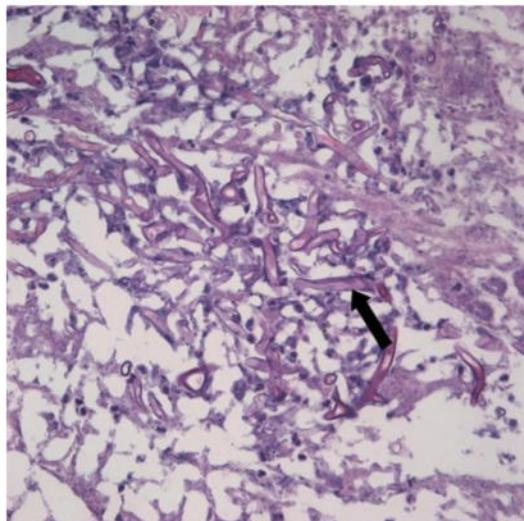
fungal hyphae branching at acute angle (thick arrows) with septations (thin arrow), characteristic of

Aspergillus fumigatus.

U

UWORLD IMAGES

09:11



U

UWORLD IMAGES

09:11

non-septate broad angled branching hyphae – Rhizopus, Mucor.

U

UWORLD IMAGES

09:12

Abdominal mucormycosis

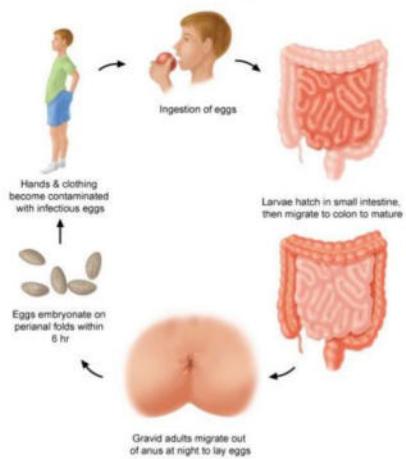


U

UWORLD IMAGES

09:12

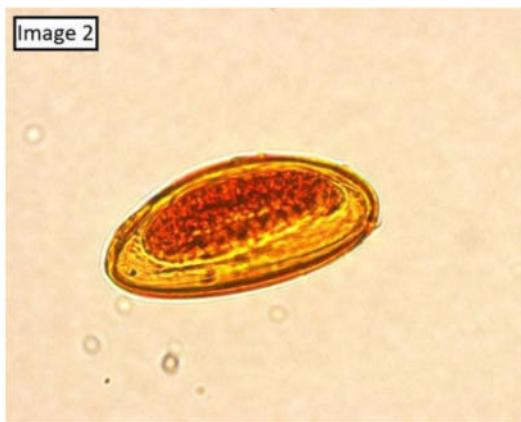
Enterobiasis life cycle



©UWorld

UWORLD IMAGES

09:12



UWORLD IMAGES

09:12

oval, asymmetrically flattened eggs with a bean-shaped appearance.

Enterobias Vermicularis (Pinworm)

scotch tape test.

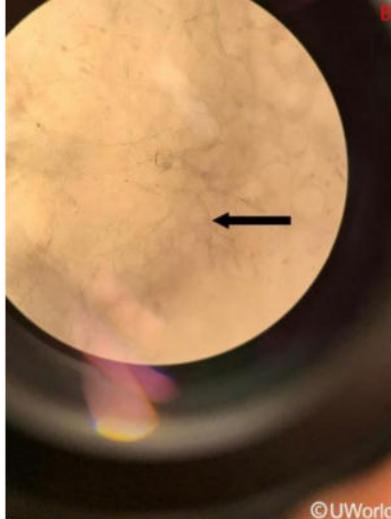
Albendazole – 1st line

Pyrantel pamoate (in pregnant)

UWORLD IMAGES

09:12

U



©UWorld

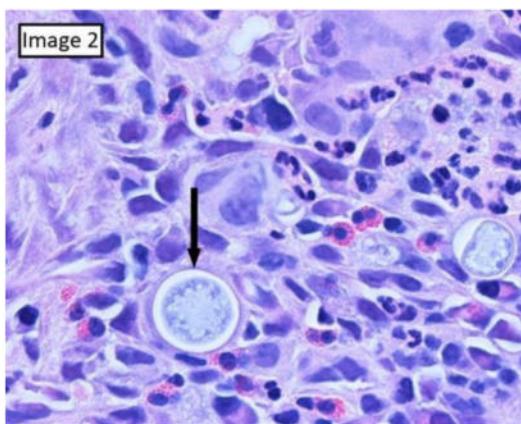
UWORLD IMAGES

09:12

Branching hyphae of Dermatophyte.

UWORLD IMAGES

09:13



UWORLD IMAGES

09:13

thick walled spherules containing endospores of Coccidioides.
(can be viewed with Methamine Silver)

predilection to spread to skin and bones

In immunocompetent hosts, *C. immitis*

asymptomatic or
flu like symptoms with erythema nodosum.

can present in 5 ways :-

1. acute pneumonia (M/C)
2. chronic progressive pneumonia
3. pulmonary nodules and cavities
4. extra-pulmonary non-meningeal disease
5. Meningitis.

severe manifestations in immunocompromised hosts.

U

UWORLD IMAGES

09:13



U

UWORLD IMAGES

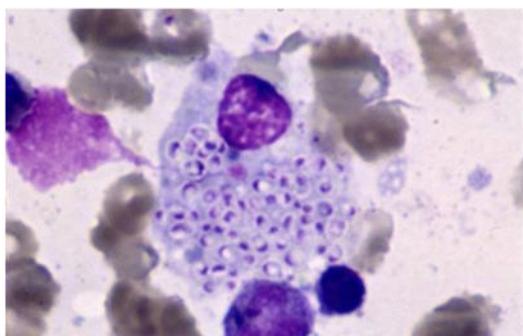
09:13

blastomycosis**broad based budding yeast.****predilection to spread to SKIN and Bones.**

U

UWORLD IMAGES

09:13



U

UWORLD IMAGES

09:13

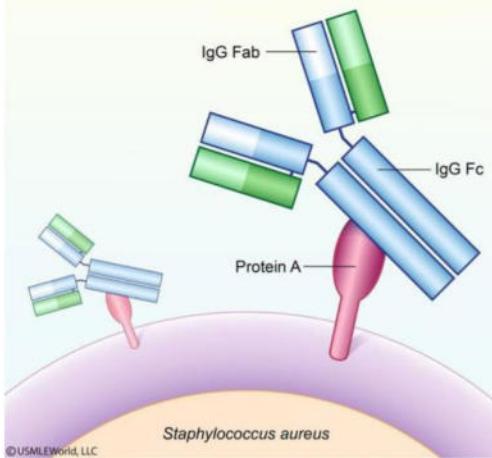
histo hides and replicates within Macrophages.**have predilection for mononuclear phagocytic cells and hence, spreads to****RE system, HSM, LAD, BM – infiltration.****(monocyte rich tissues)****vs****Ehrlichia – too have predilection to replicate inside monocytes.****hence, in those pts with impaired Cell Mediated Immunity in whom intracellular destruction is defective this fungal infection disseminates.**

U

UWORLD IMAGES

09:13

Protein A

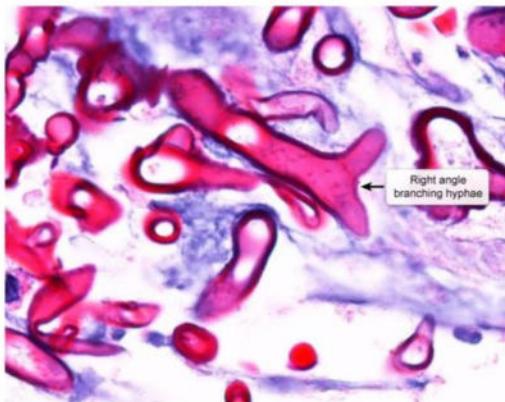


U

UWORLD IMAGES

09:13

Invasive fungal sinusitis due to mucormycosis (zygomycosis)



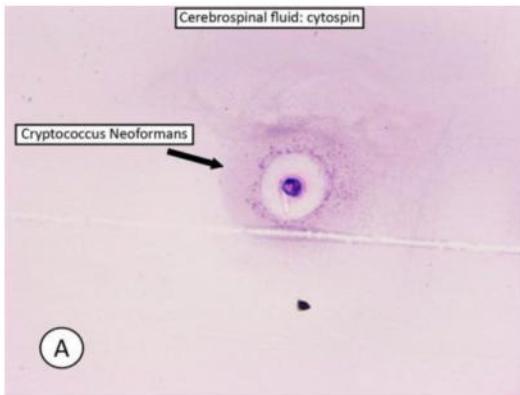
©UWorld

U

UWORLD IMAGES

09:13

[Cerebrospinal fluid: cytospin]



U

UWORLD IMAGES

09:13

a yeast with a thick capsule

can be viewed with India Ink and Mucicarmine

U

UWORLD IMAGES

09:14



U

UWORLD IMAGES

09:14

branching pseudothelia with blastoconidia

CANDIDA

Pt. receiving TPN (through central venous catheter) are at high risk of Candidemia.

Candida can colonize the catheter and the lipid emulsion in the parenteral nutrition solution is thought to promote growth of some Candida species.

Rx :-

echinocandins + Amphotericin B --> fluconazole

U

UWORLD IMAGES

09:14

Map of malaria regions



©UWorld

U

UWORLD IMAGES

09:14



U

UWORLD IMAGES

09:14

Lice attached to a hair strand.

may cause significant pruritus of hairy genital areas.

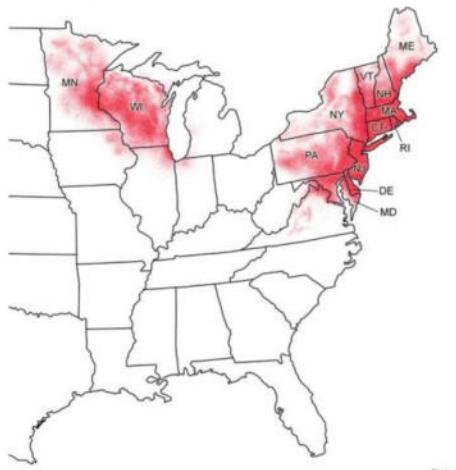
treated by Permethrin.

U

UWORLD IMAGES

09:14

Lyme Disease: Endemic Areas in the United States

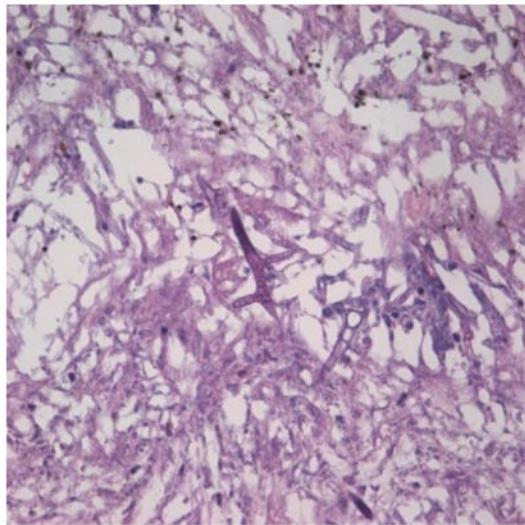


©UWorld

U

UWORLD IMAGES

09:14



U

UWORLD IMAGES

09:14

Broad (90 degree) non septate hyphae seen in Mucor, Rhizopus, Absidia

all of them are saprophytic fungi.

found only in MOLD form.

commonly invade Para Nasal Sinuses in

1. DKA

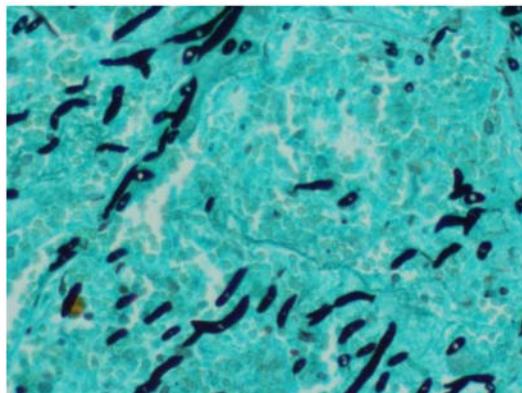
2. Immunocompromised pts (HIV, Solid Organ Transplant)

proliferate in the Blood Vessel walls and causes necrosis and black eschar formation.

clinical s/s –
slowly progressive headache,
retro-orbital pain,
nasal stuffiness and discharge

U UWORLD IMAGES

09:14



U UWORLD IMAGES

09:14

V- shaped (45 degree) branching, septate hyphae – Aspergillosis

vs

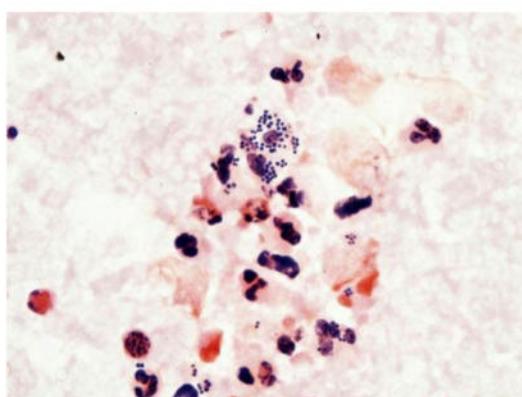
Broad (90 degree) non septate hyphae – Mucor, Rhizopus, Absidia

Both fungi can infect the paranasal sinuses and clinically present with similar complains of

slowly progressive headaches, retro-orbital pain, nasal stuffiness and purulent discharge.

U UWORLD IMAGES

09:15



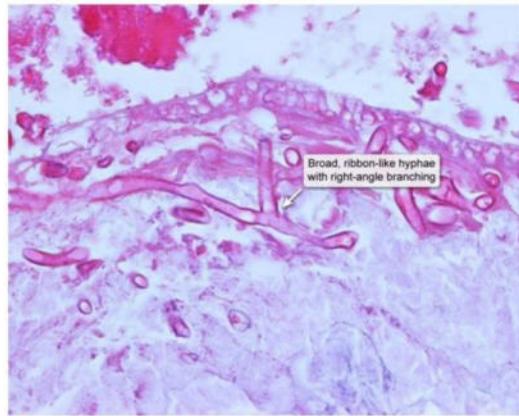
U UWORLD IMAGES

09:15

gram positive cocci in clusters

Staph. Aureus

Abdominal mucormycosis



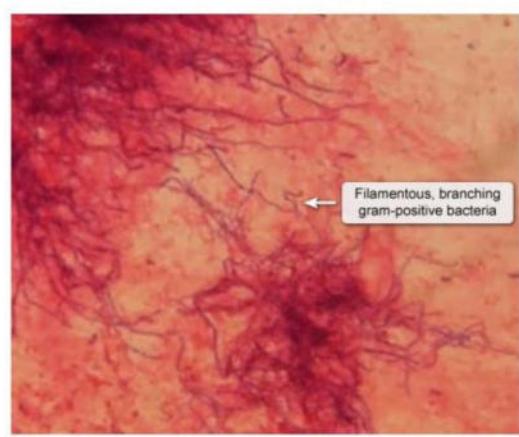
Rhizopus :-

ubiquitous fungi in soil and decaying material.

inhaled

causing Sinopulmonary or angioinvasive disease (in DKA)

Gram stain of actinomycetes

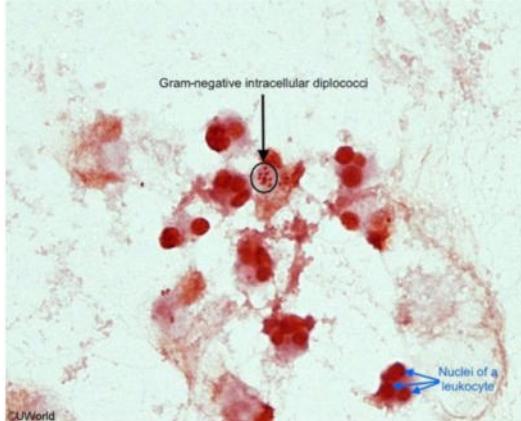


Gross - Yellow colored sulfur granules

on H&E Staining -

amorphous Basophilic (purple/blue) appearance

made up of "calcified fragmented mycelia".



U

UWORLD IMAGES

09:15

responsible for

DGI which manifests as

"septic arthritis" (in young, sexually active pt.)

or

triad of :- polyarthralgia, tenosynovitis, vesicopustular rash.

after initial Genitourinary infection (with or without symptoms).

DD :-

1. staph aureus (M/C cause ; iv drug users)
2. salmonella (in SCD)
3. group a viridans (SABE --> septic emboli)

U

UWORLD IMAGES

09:16



U

UWORLD IMAGES

09:16

erythema migrans (bull's eye shaped rash)

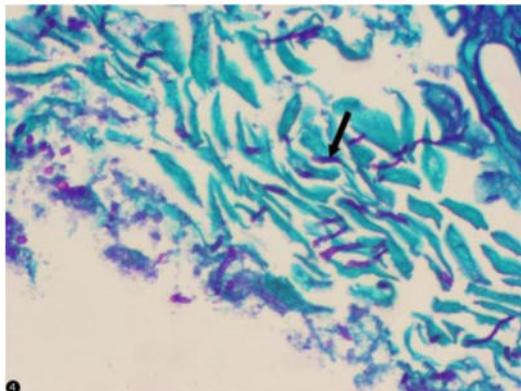
non-itchy @ the site of infection --> may progress to cardiac involvement (in few weeks)..

A-V conduction block (3rd degree)
S/S – dyspnea, lightheadedness, or syncope.

U

UWORLD IMAGES

09:16



U

UWORLD IMAGES

09:16

"pseudohypae" of *C. Albicans*

seen in Candida Esophagitis among immunocompromised/HIV.

U

UWORLD IMAGES

09:16



U

UWORLD IMAGES

09:16

"Pseudohyphae" in *C. Albicans*

M/C cause of Infectious Esophagitis

in HIV/Immunocompromised pts.

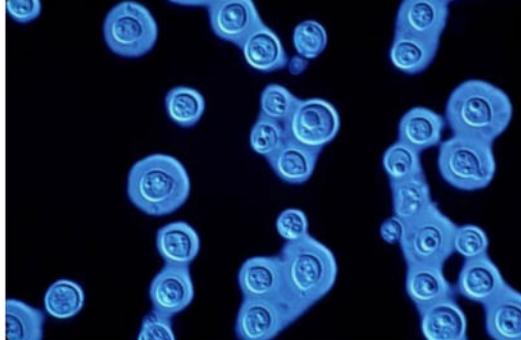
ENDOSCOPY Findings :-

"White Plaques over erythematous Mucosa"

U

UWORLD IMAGES

09:16



U

UWORLD IMAGES

09:16

"Yeast with a polysaccharide capsule" which can be seen by India Ink staining...

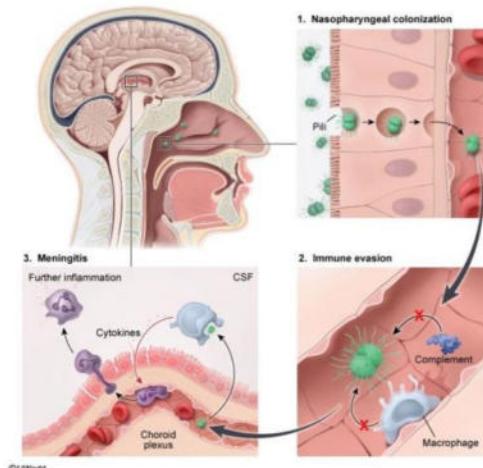
Cryptococcus Neoformans.

U

UWORLD IMAGES

09:16

Pathogenesis of *Neisseria meningitidis*



U

UWORLD IMAGES

09:17

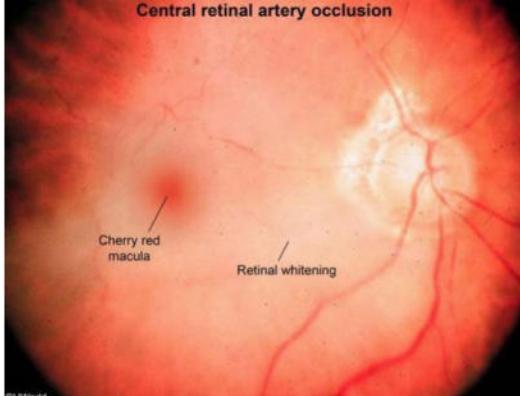


U

UWORLD IMAGES

09:18

Central retinal artery occlusion



U

UWORLD IMAGES

09:19

causes :-

athero-embolic retinal artery occlusion

cardiac vegetation; PFO

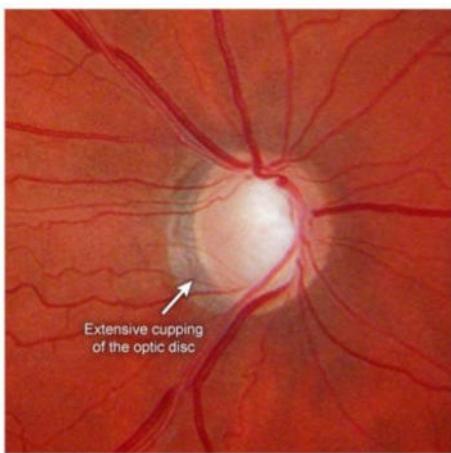
GCA vasculitis

U

UWORLD IMAGES

09:19

Glaucomatous optic atrophy (advanced)



U

UWORLD IMAGES

09:19

due to glaucoma

closed angle glaucoma

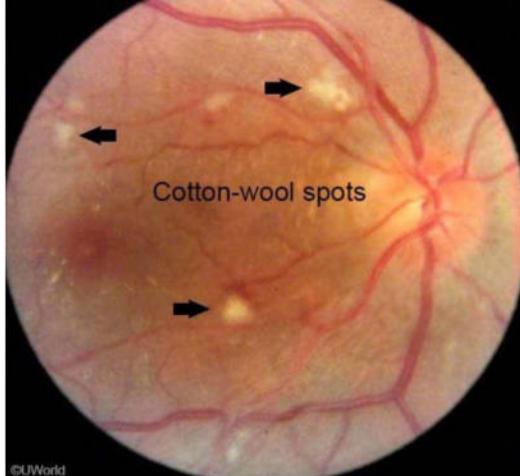
pt. presentation :-

acute headache,
eye pain,
vision loss,
afferent pupillary defect.

U

UWORLD IMAGES

09:19



U

UWORLD IMAGES

09:19

"cotton-wool spots"

small, white foci of retinal ischemia

"copper or silver wiring"

due to severe HTN --> thickening of the arteriolar walls

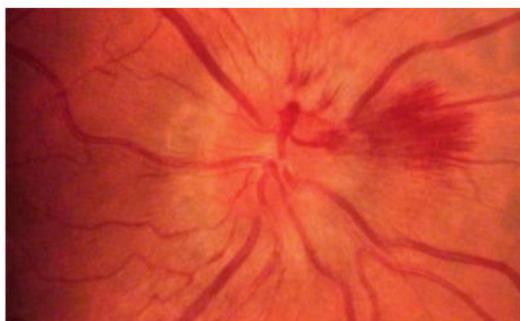
"A-V nicking"

compression of the associated veins

U

UWORLD IMAGES

09:19



U

UWORLD IMAGES

09:19

"flame shaped hemorrhage"

pt. presentation :-

poorly controlled HTN,

sudden onset shadow in the visual field/ patchy loss of vision

PATOPHYSIOLOGY :-

severe HTN of retinal precapillary arterioles --> endothelial disruption
--> leakage of plasma fluid into the vessel wall --> fibrinoid necrosis.

necrotic vessel bleed into the nerve fibre layer --> dot- & flame-shaped hemorrhage.

U

UWORLD IMAGES

09:20



U

UWORLD IMAGES

09:20

HERPES ZOSTER OPHTHALMICUS

vesicular rash in CN V1 dermatome pattern involving

U/L

forehead,

periorbital area,

side of the nose --> "hutchinson sign" – high correlation with subsequent eye involvement because the nasociliary branch of CN V1 innervates both the eye (CORNEAL SENSATION, hence acute keratitis) and the side/tip of the nose.

RAMSAY HUNT SYNDROME / HERPES ZOSTER OTICUS

vesicular rash affecting CN VII presenting with

ear pain,

vesicles in the external auditory canal, auricle

facial paralysis --> supplies orbicularis oculi --> unable to close eyelid

--> exposure keratitis --> blindness

U

UWORLD IMAGES

09:23



U

UWORLD IMAGES

09:23

"exudative tonsillopharyngitis" caused by group A streptococci

diagnosis leans towards bacterial infection

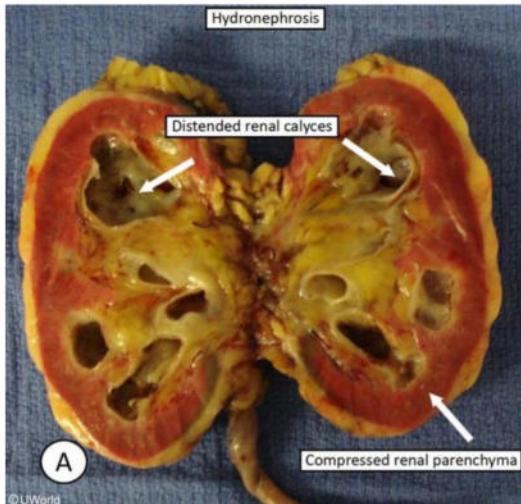
vs

Viral Infection (cough, coryza, conjunctivitis, hoarseness, mouth ulcers)

U

UWORLD IMAGES

09:23



U

UWORLD IMAGES

09:23



U

UWORLD IMAGES

09:23

Oropharyngeal Candidiasis

Asthmatic children @ increased risk.

Rx --> Topical Nystatin (swish and swallow)

a polyene antifungal.

U

UWORLD IMAGES

09:23



UWORLD IMAGES

09:23

Ulcer caused due to Diabetic Neuropathy.



UWORLD IMAGES

09:23

Ulcer caused due to venous insufficiency

LOCATION – over the tibia or proximal to medial malleolus

EDGES – irregular, shallow

in the setting of stasis dermatitis/ varicose veins.

UWORLD IMAGES

09:24

U



U UWORLD IMAGES

09:24

Alopecia Areata --> Auto Immune disorder causing

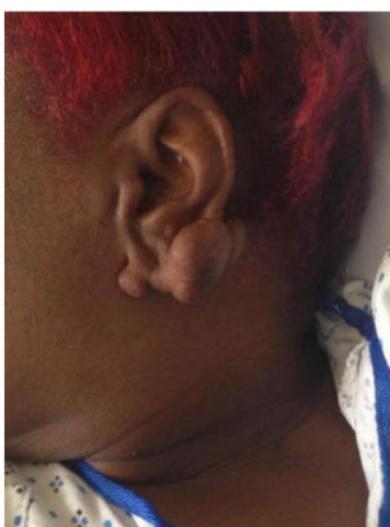
rapid- onset vs (slow, progressive in male pattern baldness)

Patchy or diffuse hair loss.

Rx --> Intra-lesional glucocorticoid

U UWORLD IMAGES

09:26



U UWORLD IMAGES

09:26

example of a keloid (excess collagen synthesis)

during the proliferative phase of wound healing,

connective tissue contains abundant fibroblasts. TGF-beta helps in conversion of Fb to myo-FB. These cells secrete connective tissue matrix (elastin, collagen).

normally, after Wound Contraction (during the proliferative phase) i/e approximation of the wounded edges, TGF-beta secretion should

decrease.

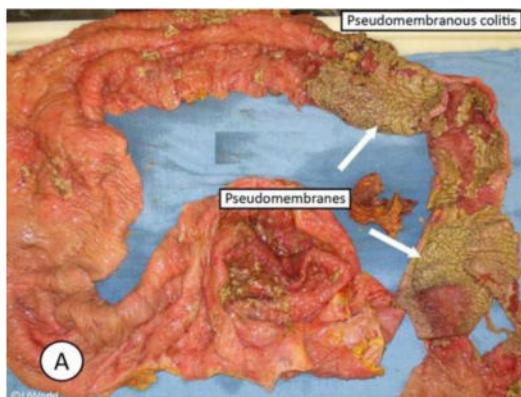
BUT

in some (African, Asian ethnicity) this doesn't occur --> granulation tissue extending beyond the border.

U

UWORLD IMAGES

09:26



U

UWORLD IMAGES

09:26

Clostridium difficile infection can result in

asymptomatic carriers

pseudomembranous colitis

fulminant colitis.

Prior Antibiotic exposure (penicillin, FQ, clindamycin) most significant risk factor.

Pt presents with

watery diarrhea +- blood
abdominal pain
fever
leukocytosis

U

UWORLD IMAGES

09:26



chancre seen in Primary Syphilis

SINGLE, PAINLESS
with
clean, erythematous BASE
and
heaped up border.

NO LAD

other cause of Painless Ulcerations caused by STI :-

1. LGV – infection of lymphatics caused by C. Trachomatis.
(small shallow ulcers with large, painful coalesced LN)

2. Granuloma Inguinale – caused by Klebsiella Granulomatis.

extensive, beefy ulcerative lesions which bleeds on touch and have granulomatous base.



Displayed with permission from Current Medicine Group LLC © 2000.

note the enlarged LV Cavity

seen in dilated cardiomyopathy / Systolic dysfunction.

cardiomyopathy is characterised by Primary Myocardial Dysfunction
(pathologic process directly targeting myocardium)

not
myocardial remodelling/ changes 2ndary to any other factors like

HTN

CAD

Valve dysfunction



red arrow – "dilated superficial veins"

black arrow – "venous stasis dermatitis" (tissue ischemia and poor wound healing)

extravasation of RBC --> iron deposition leading to characteristic brawny discoloration.

Risk Factors –

sedentary lifestyle <-----> Prolonged Standing

obstruction --> pregnancy, obesity

damage to valves --> DVT.

superficial veins --> perforators --> deep veins.

due to

increased intraluminal pressure in veins --> venous dilation --> valve incompetency.



swelling of lips (as seen in angioedema) along with tongue and eyelid swelling.

rarely, with laryngeal edema (stridor) with breathing difficulty.

+ urticaria/pruritus –

IgE mediated mast cell activation

or direct mast cell activation due to opiates/vancomycin

- urticaria/pruritus – accumulated bradykinin

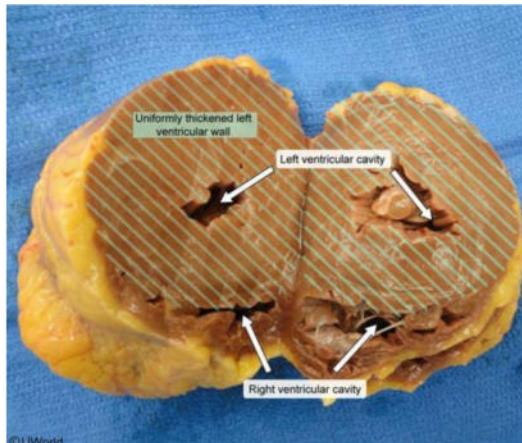
young – hereditary C1 esterase deficiency

elderly – ACE Inhibitor therapy

U

UWORLD IMAGES

09:27



U

UWORLD IMAGES

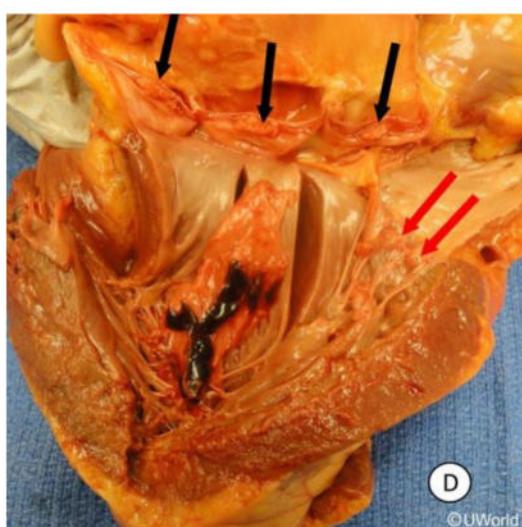
09:27

due to prolonged HTN

U

UWORLD IMAGES

09:27



U

UWORLD IMAGES

09:27

black arrows – thickened aortic valve leaflets.

red arrows – thickened mitral valve leaflets.

+

multiple, small vegetations.

in SLE – Libman-Sacks Endocarditis --> multiple small vegetations.

vs

large destructive vegetations in Bacterial Endocarditis.

U

UWORLD IMAGES

09:27



U

UWORLD IMAGES

09:28

splinter hemorrhages.

or

subungual, flame shaped hemorrhages due to microemboli.

seen in IE.

Pt. may present with dyspnea --> hence, proceed for cardiac auscultation to check for "new-onset" regurgitant murmur.

U

UWORLD IMAGES

09:28



U

UWORLD IMAGES

09:28

Raynaud Phenomenon :-

CREST Syndrome

Vasculitis (Buerger's Disease)

triphasic color change

pallor --> cyanosis --> erythema

blue --> white --> red



Osler's Node – painful, violaceous nodules. due to immune-complex deposition in the skin.

seen in infective endocarditis.



Splinter hemorrhage



Displayed with permission from Springer Healthcare Ltd. © Copyright 1997, 2004 by Current Medicine.

U

UWORLD IMAGES

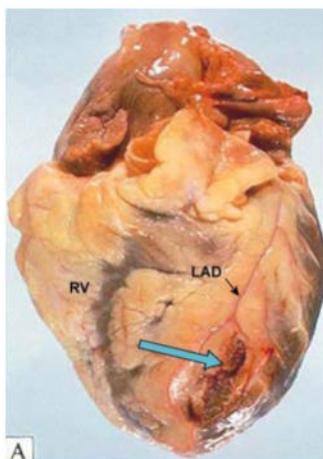
09:30

Janeway Lesions – erythematous, papules, non-tender, due to vascular spread of septic emboli from valvular vegetations.

U

UWORLD IMAGES

09:30



Displayed with permission from Springer Healthcare Ltd.
© Copyright 1995, 2005 by Current Medicine

U

UWORLD IMAGES

09:31

"slit-like tear" on the anterior wall of the heart.

MI -->

"weakening of the wall"

(by macrophages and neutrophil mediated necrosis + enzymatic lysis of connective tissue)

+

"increased shear stress" (due to akinesia of the infarcted portion)

-->

LV free wall rupture (5–14 days post MI)

U

UWORLD IMAGES

09:31



U

UWORLD IMAGES

09:31

"
white
oral mucosal
plaque
which can be easily scrapped off
"
means "oropharyngeal candidiasis"(OPC).

caused due to poor breathing technique, in asthamtics using
inhaled corticosteroids.

"Dysphonia may also occur due to myopathy of laryngeal muscles and mucosal irritation" (unrelated to OPC)

prevented by using a Spacer and Rinsing the mouth after use.

U

UWORLD IMAGES

09:31



U

UWORLD IMAGES

09:31

chronic exposure to cigarette smoke, results in Emphysema, via the following mechanisms :-

1. Inflammation and Leukocyte Infiltration :-

alveolar macrophages --> inf. cytokines -->
neutrophil + CD8+ T lymphocyte recruitment

; -

2. Protease – anti Protease imbalance

3.Oxidative stress – due to cigarette smoke --> ROS --> direct damage

loss of alveolar elasticity --> alveolar distension -->

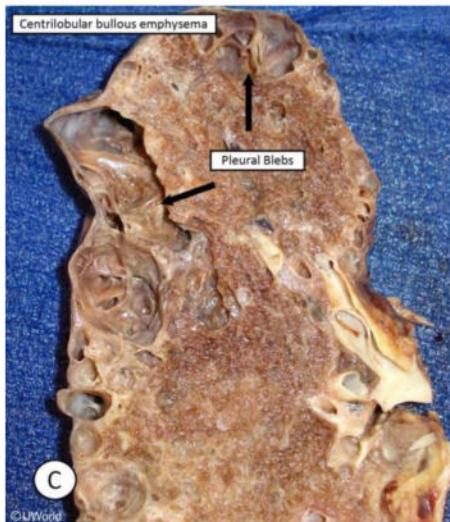
large air spaces (>1 cm) called Sub Pleural Blebs (usually at the lung apex) -->

rupture --> spontaneous pneumothorax.

U

UWORLD IMAGES

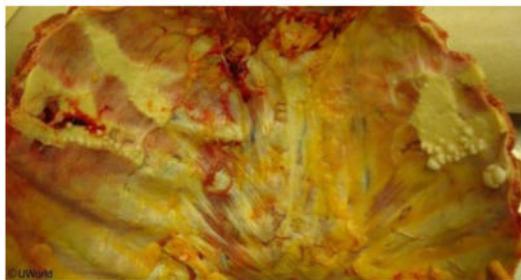
09:31



U

UWORLD IMAGES

09:31



U

UWORLD IMAGES

09:31

"focal thickening and calcification of the parietal pleura"

Pleural Plaques

seen in Asbestosis.

Pleuro – thickening, plaques, effusion, mesothelioma

Plumonary – fibrosis (Lower lobe), carcinoma

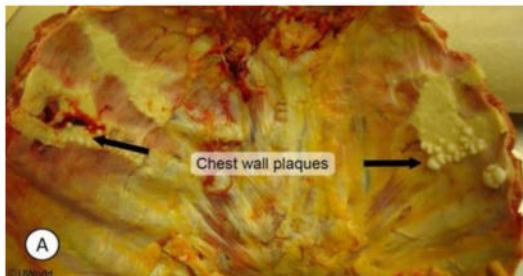
Ferruginous Bodies

DD:-

1. Asbestos – translucent fibre core
2. Carbon
3. Talc

UWORLD IMAGES

09:32



UWORLD IMAGES

09:32



UWORLD IMAGES

09:32

Embolus within Pulmonary artery --> occlusion of >50% -->

rapid increase in Pul. vascular Resistance --> acute RV dysfunction

-->

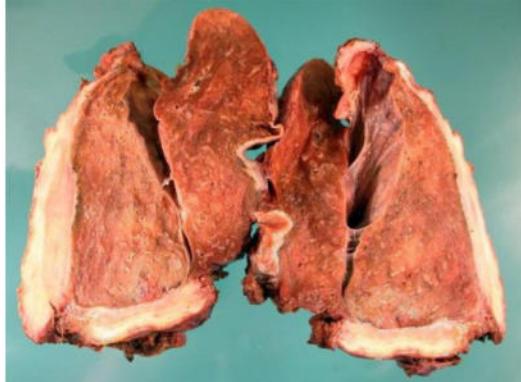
reduced LV preload --> sudden loss of cardiac output.

rarely,

RV strain or ischemia --> SCD due to cardiac arrhythmia.

UWORLD IMAGES

09:32



UWORLD IMAGES

09:32

note the thickened pleura

due to mesothelioma.

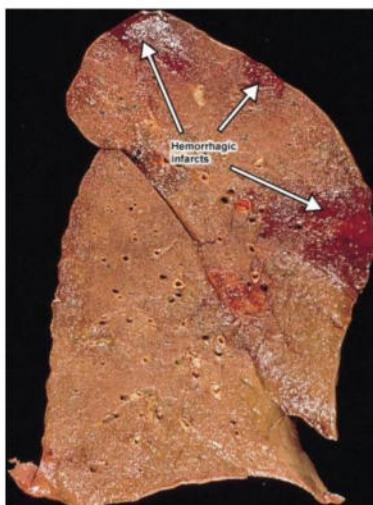
h/o asbestos exposure.

immunohistochemical staining (necessary for diagnosis)

epithelium like- or spindle cells which are positive for cytokeratin & calretinin

UWORLD IMAGES

09:32



Displayed with permission from Springer Healthcare Ltd. © Copyright 1996, 2004 by Current Medicine

UWORLD IMAGES

09:32

due to tricuspid valve endocarditis --> septic embolization.

Staph. Aureus

UWORLD IMAGES

09:32



UWORLD IMAGES

09:32

"palpable purpura"

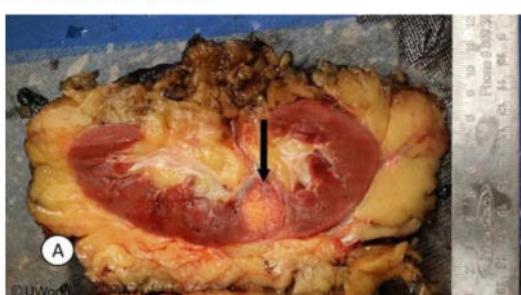
DD:-

1. HSP

2.

UWORLD IMAGES

09:32



UWORLD IMAGES

09:33

"yellow coloured mass" of RCC

UWORLD IMAGES

09:33



UWORLD IMAGES

09:33

Renal Angiomyolipoma :-

Benign Tumor arising from Blood Vessel Epithelial Cells with tumor components originating from

Angio - red

Myo - gray

Lipoma - yellow

if present in B/L in kidneys – TUBEROUS SCLEROSIS

U

UWORLD IMAGES

09:33



U

UWORLD IMAGES

09:33

livido reticularis

U

UWORLD IMAGES

09:33



U

UWORLD IMAGES

09:34

Struvite Stones (Mg Ammonium Phosphate) – takes the shape of renal calyces.

due to repeated Upper UTI with Urease producing org. (Klebsiella, Proteus) -->

ammonia generated alkalinizes urine -->
accelerating crystallization of stones.

S/S :-

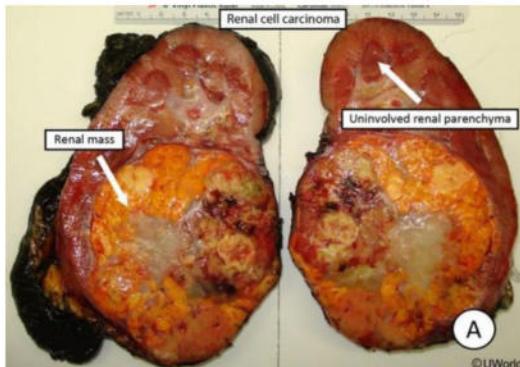
fever, flank pain (due to obstruction)

GROSS FINDINGS :-

"cortical atrophy and xanthomatous changes in renal parenchyma"
"dilation of the papillae"

UWORLD IMAGES

09:34



UWORLD IMAGES

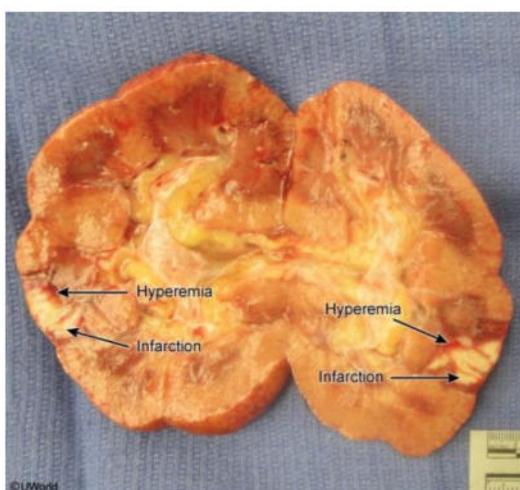
09:34

RCC

(yellow well circumscribed fungating mass)

UWORLD IMAGES

09:34



UWORLD IMAGES

09:34

"RENAL INFARCTION"

("sharply" demarcated "yellow-white" coloured "wedge" shaped infarcts surrounded by areas of hyperemia)

most likely due to Cardio Embolism, caused in A Fib. patients.

S/S :-

acute flank pain + hematuria

HTN (due to excess renin release from hypoxic tissue)

DD:-

1. RCC

(yellow coloured, well circumscribed fungating mass)

2. Renal Papillary Necrosis

(cortical atrophy with necrotic, sloughing papillae)

3. Pyelonephritis

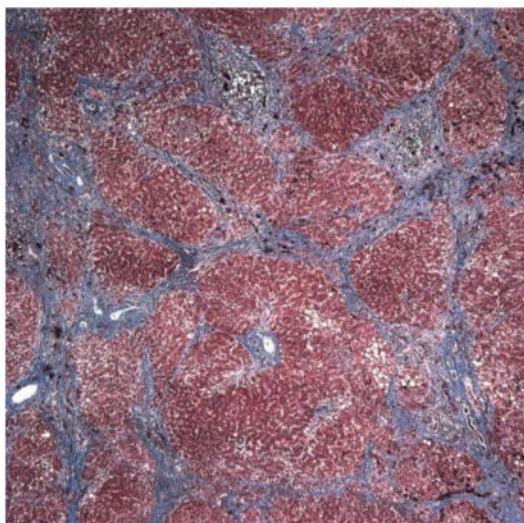
4. Nephrolithiasis

(widened calyces and ureters + compressed parenchyma)

U

UWORLD IMAGES

09:34



U

UWORLD IMAGES

09:34

diffuse hepatic fibrosis with normal lobular architecture replaced by regenerating parenchymal nodules in

CIRRHOSIS.

U

UWORLD IMAGES

09:34



Displayed with permission from Springer Healthcare Ltd. © Copyright 2006 by Current Medicine

U

UWORLD IMAGES

09:34

Micro Nodular Liver

seen in Cirrhosis usually caused by

chronic Hepatitis B & C

Alcoholic Liver Disease

NASH

hemochromatosis

microscopically, diffuse hepatic fibrosis with normal lobular

architecture replaced by fibrous lined regenerating parenchymal nodules.

U

UWORLD IMAGES

09:34



U

UWORLD IMAGES

09:34

numerous mucosal outpouching in resected and opened Sigmoid Colon, representing Diverticulosis.

DIVERTICULOSIS :- clinically silent

DIVERTICULAR BLEEDING :- painless hematochezia

DIVERTICULITIS :- Fever, Leukocytosis, LLQ Pain, Diarrhea/Cons.

U

UWORLD IMAGES

09:35



U

UWORLD IMAGES

09:35

Numerous Colonic Polyps in FAP which may progress to Colorectal Cancer.

U

UWORLD IMAGES

09:35



U

UWORLD IMAGES

09:35

CAPUT MEDUSAE :-

drainage of

Para-Umbilical Veins (Portal)

to

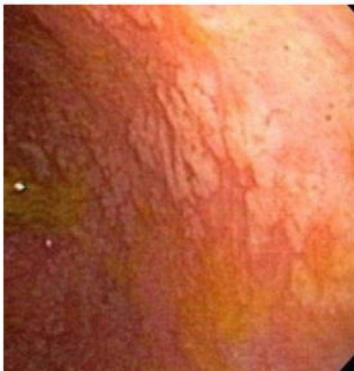
Superficial and Inferior Epigastric Veins (Systemic)

in long standing cases of Portal hypertension.

U

UWORLD IMAGES

09:35



U

UWORLD IMAGES

09:35

"mucosal pseudo-membranes" (yellow coloured) seen in endoscopy in a pt. with C. Difficile Infection post antibiotic use which presents as

Fever

Leukocytosis

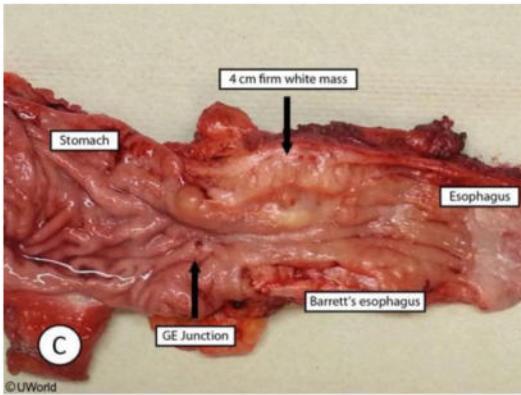
RLQ abd. pain

diarrhea

U

UWORLD IMAGES

09:35



U

UWORLD IMAGES

09:35

on Gross examination, "tongues of beefy red mucosa" (Barrett's Esophagus) extending from the LES to "normal pale pink mucosa" of the (Esophagus).

Barrett's Esophagus is hypothesised to be an ADAPTIVE response to chronic damage to the normal (Nonkeratinized stratified squamous) epithelium of the esophagus by the gastric acid.

Columnar Intestinal Epithelium is resistant to gastric acid.

U

UWORLD IMAGES

09:35



U

UWORLD IMAGES

09:36

Serum sickness

U

UWORLD IMAGES

09:36



U

UWORLD IMAGES

09:36

Pseudopolyps are "areas of granulations" (healing) which can be seen in UC.

U

UWORLD IMAGES

09:36

Pseudomembranous colitis



U

UWORLD IMAGES

09:36

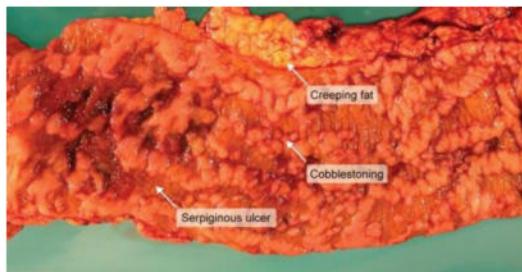
"White/Yellow Patchy pseudomembrane formed of fibrin, inflammatory cell infiltrate"

represents overgrowth of C. difficile bacteria post intake of antibiotics causing imbalance of normal gut flora.

U

UWORLD IMAGES

09:36



U

UWORLD IMAGES

09:36

Crohn's Disease

U

UWORLD IMAGES

09:36



U

UWORLD IMAGES

09:37

"CALM" (cafe-au-lait macules)

seen in :-

1. NF-1 (smooth border)
2. McCune-Albright Syndrome (U/L) + (irregular border)

U

UWORLD IMAGES

09:37



U

UWORLD IMAGES

09:37

Rheumatoid Arthritis

U

UWORLD IMAGES

09:37



U

UWORLD IMAGES

09:37

"heliotrope rash"

(violaceous periorbital edema of the eyelids)

U

UWORLD IMAGES

09:37



U

UWORLD IMAGES

09:37

"GOTTRON PAPULES"

seen in Dermatomyositis

U

UWORLD IMAGES

09:37



UWORLD IMAGES

"TOPHI" in Gout

09:37

UWORLD IMAGES



09:37

UWORLD IMAGES

"Rheumatoid Nodules" firm, non tender, subcutaneous nodules.

09:38

Found on forearm, pressure point regions.

UWORLD IMAGES



09:38

UWORLD IMAGES

"Malar Rash" in SLE

09:38

Lab Findings :-

1. increased Immune Complexes
2. decreased Complement Levels (c3 & C4)
3. Ab Titres elevated (smith/ ds-DNA/nuclear)

U

UWORLD IMAGES

09:38



U

UWORLD IMAGES

09:38

"Keratoderma Blennorrhagiam" – are hyperkeratotic vesicles on Palm and Soles.

U

UWORLD IMAGES

09:38



U

UWORLD IMAGES

09:38

Malformed Teeth due to defective Collagen Type 1 laying down.

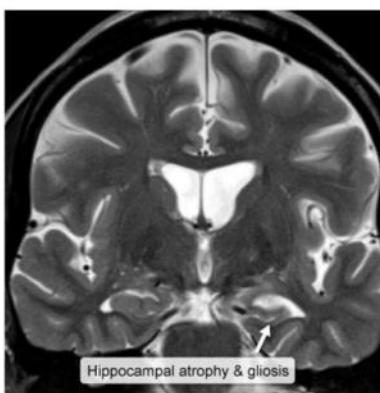
AD ;
ass. with blue sclerae/ Brittle Bones

U

UWORLD IMAGES

09:42

Mesial temporal sclerosis



©UWorld

U

UWORLD IMAGES

09:43

epileptiform discharges to the mesial temporal lobe
(hippocampus, amygdala and parahippocampal gyrus)

U

UWORLD IMAGES

09:43



U

UWORLD IMAGES

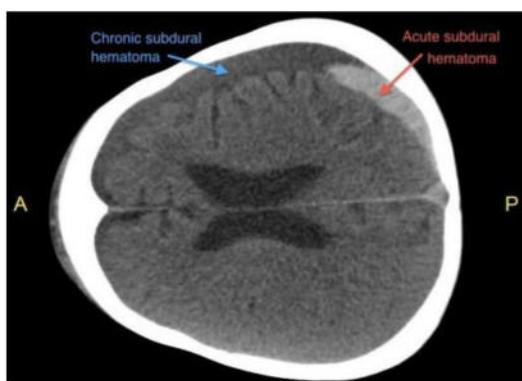
09:43

seen in interstitial pulmonary fibrosis

U

UWORLD IMAGES

09:43



U

UWORLD IMAGES

09:43

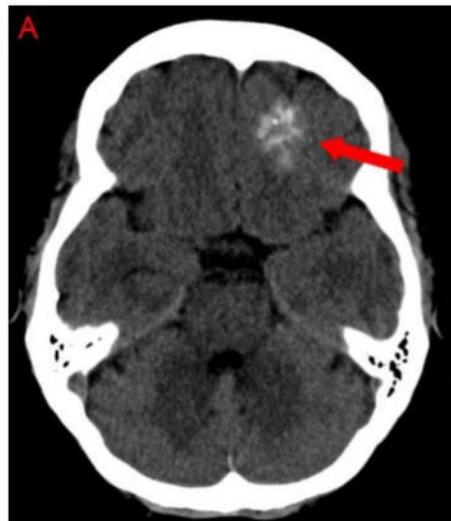
AHT – abusive head trauma

due to AHT repeatedly over weeks to months.

U

UWORLD IMAGES

09:43



U

UWORLD IMAGES

09:43

hyper dense white mass --> Intra cranial bleeding

one of the potential cause is :-

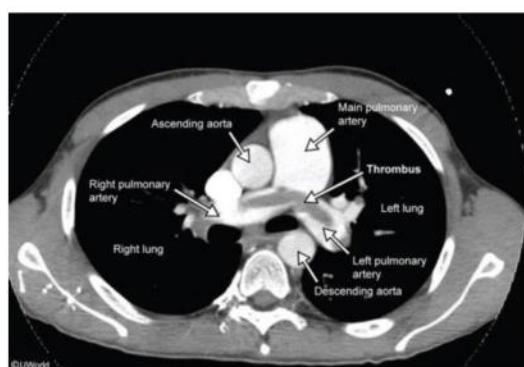
Cavernous Hemangioma (usually in brain parenchyma, above the tentorium cerebelli)

It may cause seizures (initially) and may rupture to cause IC hemorrhage.

U

UWORLD IMAGES

09:44



U

UWORLD IMAGES

09:44



UWORLD IMAGES

09:44

Osteolytic (radiolucent) bone lesions
+
hypercalcemia
(groans, stones, psychiatric overtones)

characteristic finding of Multiple Myeloma

DD :-

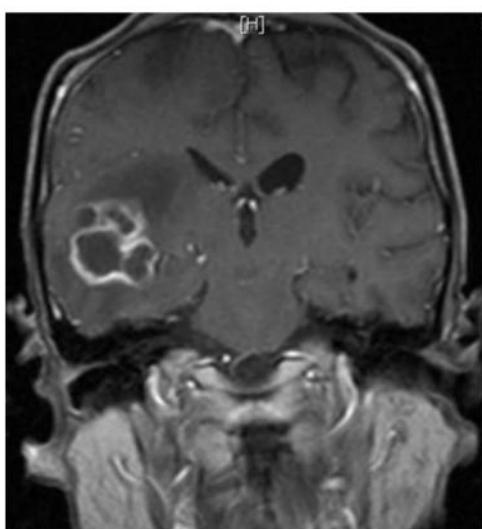
Mature T-cell Lymphoma – (caused by HTLV-1 infection in JAPAN, AFRICA, CARIBBEAN)

additional Cutaneous Rash, nodules + HSM + LAD

U

UWORLD IMAGES

09:44



U

UWORLD IMAGES

09:44

multiloculated brain abscess caused by Nocardia

(gram positive, branching bacteria)

Usually causes Infection in immunocompromised pt.

Pulmonary – Bronchopneumonia with Abscess/cavities

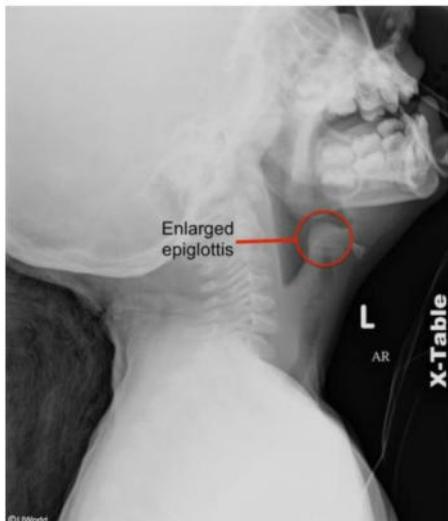
Spreads through blood

To involve the Brain

U

UWORLD IMAGES

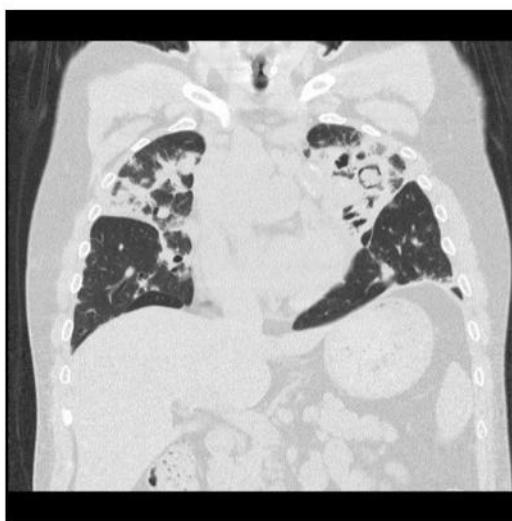
09:44



U

UWORLD IMAGES

09:44



U

UWORLD IMAGES

09:44

Left Upper lobe cavity filled with a mass

Aspergilloma/ Mycetoma

a mold which is inhaled via spores. widely found in organic matter.

grows as a Septate Hyphae branching at 45 degrees

in normal healthy subjects, inhaled spores are cleared by mucus and respiratory Epithelium Cilia.

Spectrum of disease :-

1. COLONIZING -

h/o TB, Sarcoidosis, Emphysema – colonizes in pre-existing cavity, "fungus ball".

pt presents with episodes of hemoptysis.

Diagnosis by CXR/CT :- radiopaque mass which shifts with position.

2. INVASIVE -

in severely immunocompromised and neutropenic (CGD),

primary Lung Infection -->

cough, pleuritic chest pain, hemoptysis, fever -->

Necrotising Pneumonia and granuloma formation -->

Blood vessel invasion --> Extra Pulmonary manifestations

3. ALLERGIC –

h/o Asthma, Cystic Fibrosis --> pt. may present with worsening and recurrent episodes of wheezing, hemoptysis.

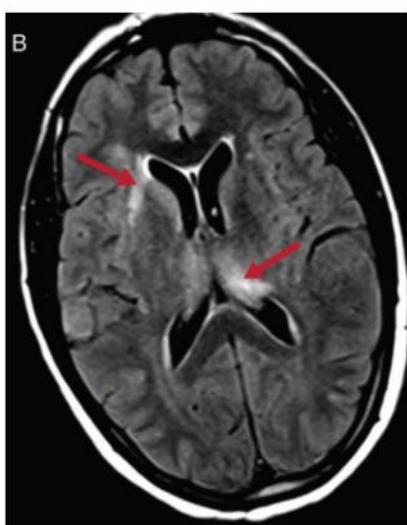
Diagnosis CT – "migratory/transient/fleeting Pul. Infiltrate" and Bronchiectasis.

inc. levels of IgE and Eosinophils. Ab specific against Aspergillus

U

UWORLD IMAGES

09:44



U

UWORLD IMAGES

09:45

multiple white matter demyelination
(without enhancement/ mass effect)

in AIDS Pts.

due to reactivation of JC Virus.

slowly progressive condition over weeks.

DD :-

SSPE (slowly progressive too ; but with enhancement)

CMV (rapidly progressing ; multiple ring Enhancing with mass effect)

EBV (rapidly <1 week ; temporal lobe enhancement)

T. Gondi (multiple ring enhancing with surrounding edema)

U

UWORLD IMAGES

09:45



U

UWORLD IMAGES

09:45

B/L Reticulonodular Pulmonary Infiltrate

may be seen in

Mycoplasma pneumoniae

Chlamydophila pneumoniae (walking P in elderly)

PCP in HIV Pts. (<200/mm³)

U

UWORLD IMAGES

09:45



UWORLD IMAGES

09:45

Suppurative Parotitis

UWORLD IMAGES

09:45



UWORLD IMAGES

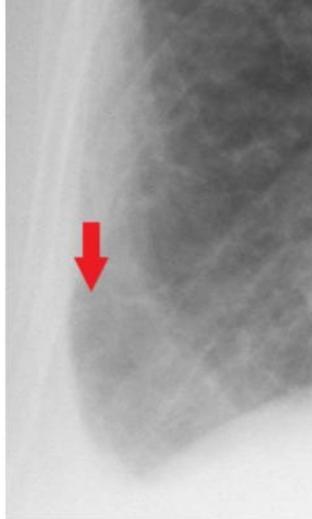
09:46



UWORLD IMAGES

09:46

U



UWORLD IMAGES

09:46

U

"short, horizontal lines perpendicular to the pleural surfaces that represent edema of the interlobular septa"

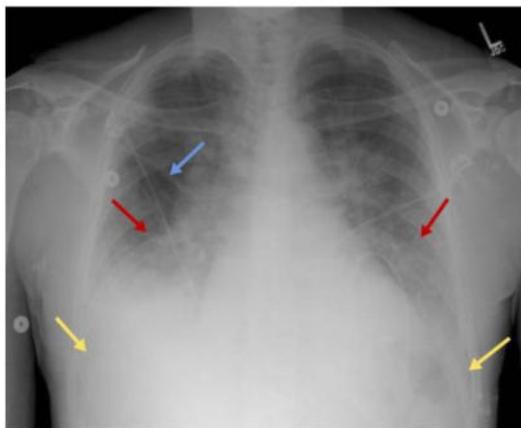
KERLEY B Lines

seen in pulmonary edema

UWORLD IMAGES

09:46

U



UWORLD IMAGES

09:46

U

RED ARROWS – " B/L airspace opacities"

YELLOW – "obliteration of CP angle"

BLUE – " fluid trapped b/w Right upper and middle lobe"
(Fissure Sign)

these changes are seen in HF pts.
(cardiogenic pulmonary edema)

similar findings in CXR in non-cardiogenic pul edema
i.e. ARDS (h/o precipitating event – sepsis, pneumonia, aspiration)

U

UWORLD IMAGES

09:46



U

UWORLD IMAGES

09:46

note the "hyperinflated lungs" + "flattened diaphragm"

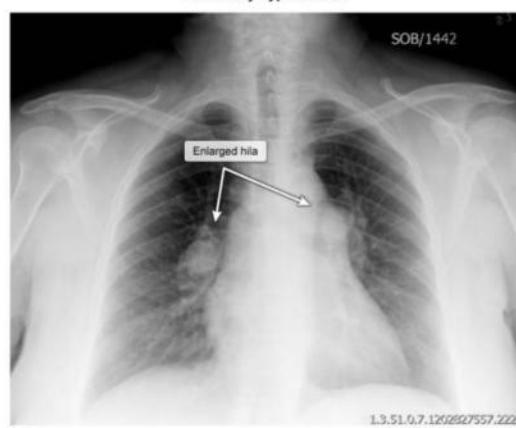
feature of COPD (except in asthma - normal CXR)

U

UWORLD IMAGES

09:46

Pulmonary hypertension



U

UWORLD IMAGES

09:46

"enlarged pulmonary arteries" in the absence of Pul Edema

and

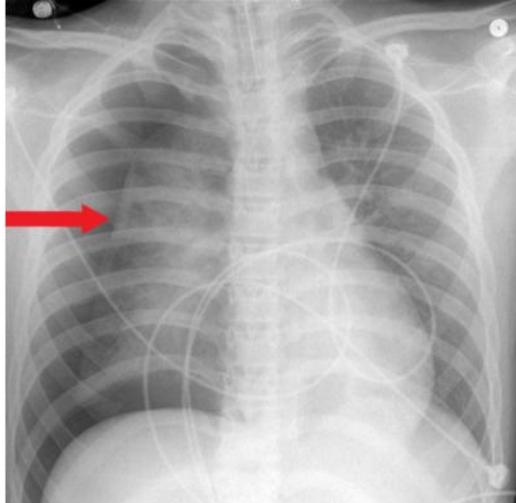
enlarged RV (not seen)

seen in Pulmonary ARTERIAL HTN.

U

UWORLD IMAGES

09:46



UWORLD IMAGES

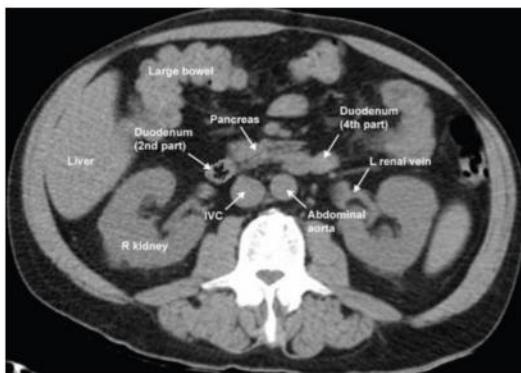
09:47

"white visceral pleural line" in the absence of peripheral pulmonary marking.

seen in pneumothorax

UWORLD IMAGES

09:47



UWORLD IMAGES

09:47

L2 level

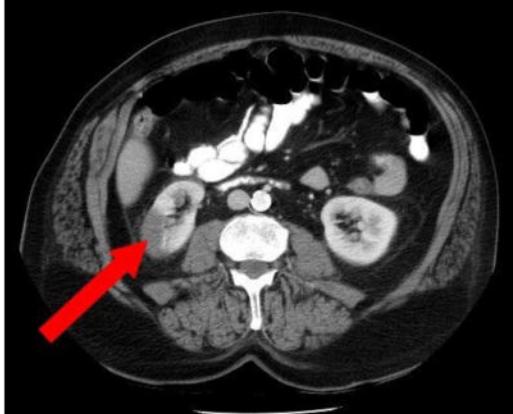
UWORLD IMAGES

09:47



UWORLD IMAGES

09:47



UWORLD IMAGES

09:47

Renal Infarction due to A. Fib.

usually the thromboembolic complication affects Brain and Kidneys due to high blood perfusion in these organs.

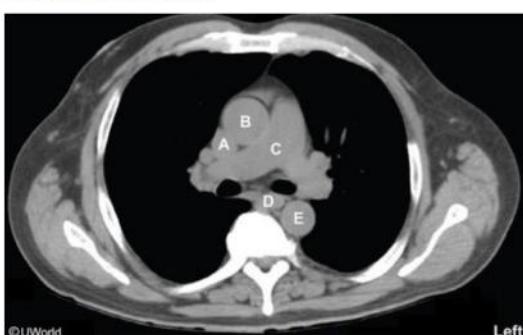
UWORLD IMAGES

09:47



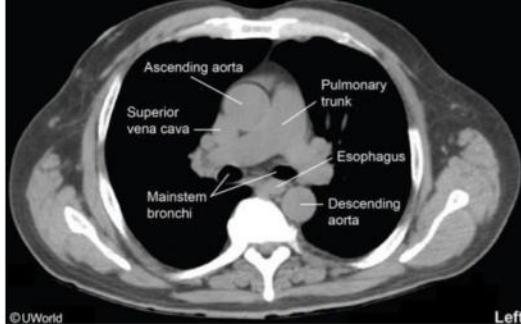
UWORLD IMAGES

09:47



UWORLD IMAGES

09:48



U

UWORLD IMAGES

09:48



U

UWORLD IMAGES

09:48

AAA (abdominal aortic aneurysm)

focal dilation of the abd. aorta >50% above the normal (> 3 cm in diameter).

usually asymptomatic until rupture.

Risk Factors :-

age (> 65 years) + smoking + Male

Transmural Inflammation of the wall -->

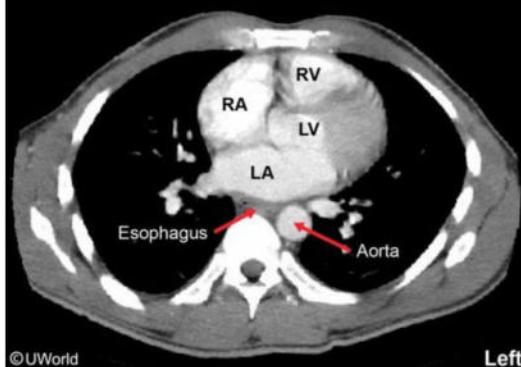
apoptosis of the SMC + degradation of the matrix protein -->

thinning of the aortic wall with 2ndary expansion of the lumen (due to chronic hemodynamic stress)

U

UWORLD IMAGES

09:48



U

UWORLD IMAGES

09:48



U

UWORLD IMAGES

09:48

Medial band-like calcifications occur in Mönckeberg arteriosclerosis.
calcified deposits in muscular arteries,
age >50 years.

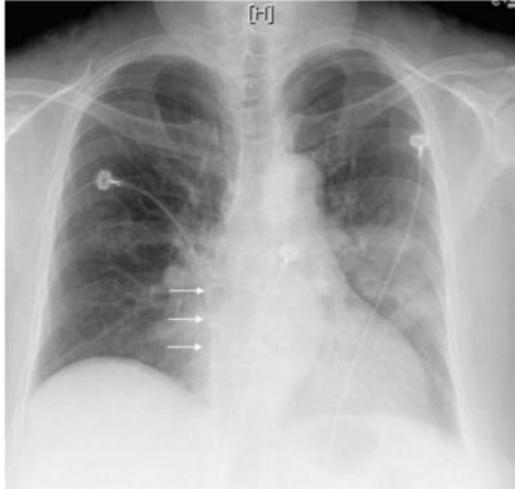
BUT,

these calcifications are Asymptomatic clinically, i.e. they do not cause
an narrowing of the vessel lumen.

U

UWORLD IMAGES

09:48



UWORLD IMAGES

09:48

U

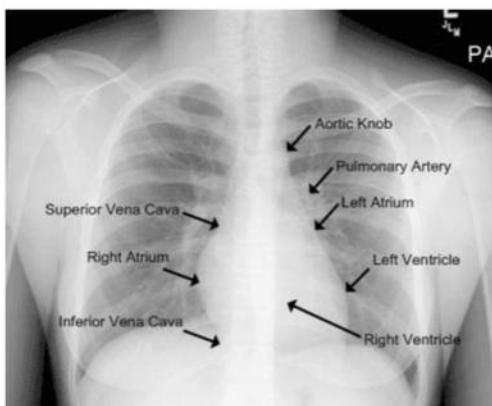
Right Atrium forms the Right cardiac silhouette, and lies immediately adjacent to Right Middle lobe of the Lung.

RV forms the anterior wall of the heart, and can be best seen with Lateral CXR.

UWORLD IMAGES

09:49

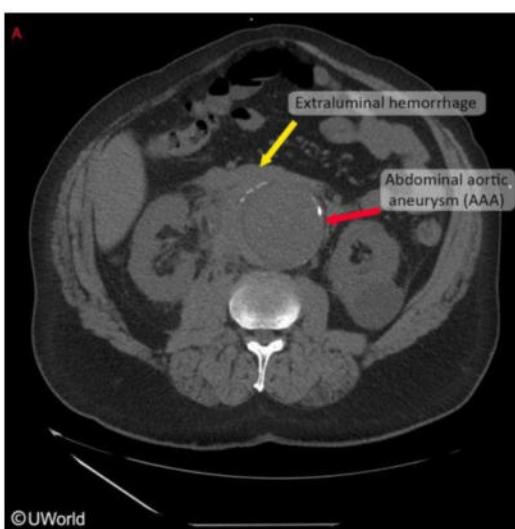
U

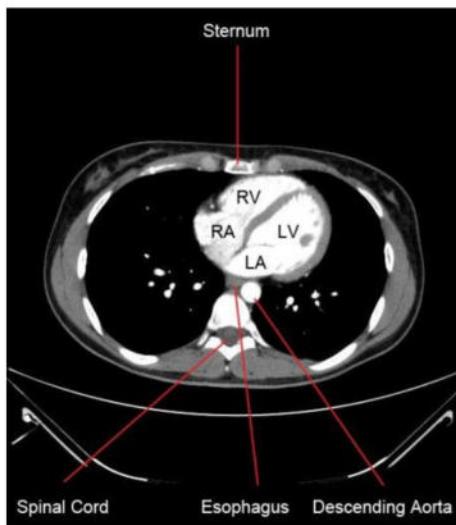
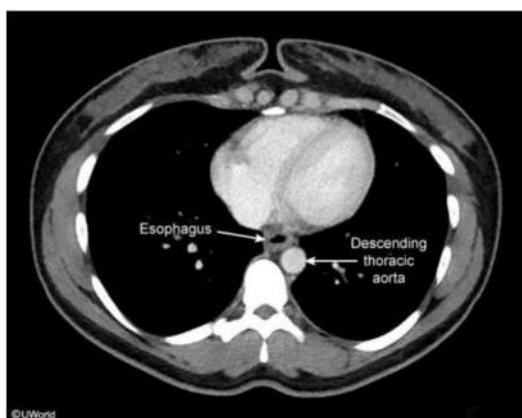
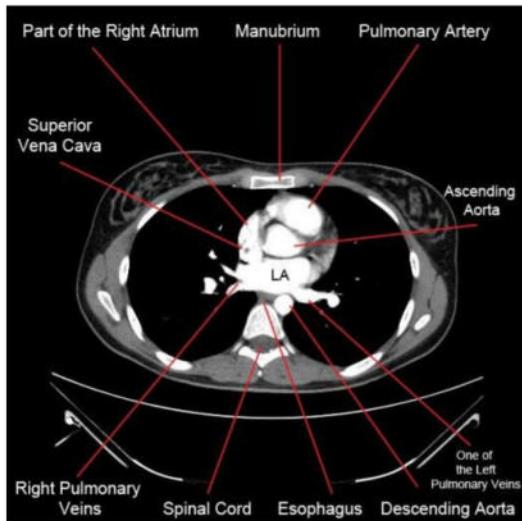


UWORLD IMAGES

09:49

U







UWORLD IMAGES

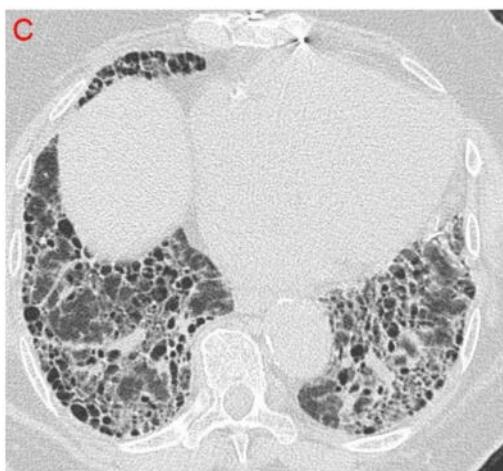
09:49

notice the destruction of alveolar septa (blackened region)

due to COPD

UWORLD IMAGES

09:50



UWORLD IMAGES

09:50

Idiopathic pulmonary fibrosis

"honeycombing change" in the peripheral regions.

(may be mentioned as subpleural or lobular)

Therapies which slow down fibrosis

Perfenidone (inhibits TGF-beta)

nintedanib (tyrosine kinase inhibitor) inhibits PDGF, FGF, VEGF

UWORLD IMAGES

09:50

U



U

UWORLD IMAGES

09:50

"peripheral honeycomb pattern" + reticular infiltrates

suggestive of Idiopathic Pulmonary Fibrosis.
(in the absence of other disease process)

assumed due to repetitive injury and defective wound healing.

Lung injury --> loss of type 1 Pneumocytes.

type 2 pneumocytes undergo hyperplasia but do not differentiate into type 1 cells (due to altered signalling pathways)

hence,

fibroblast and myofibroblast migration and proliferation --> dense fibrosis.

U

UWORLD IMAGES

09:50



U

UWORLD IMAGES

09:50

"ill-defined nodular" or "irregular" opacities on CXR

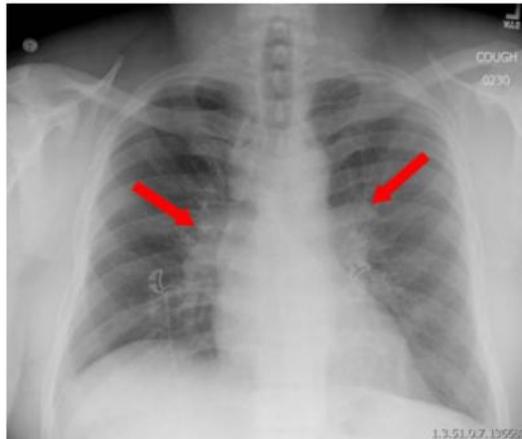
+

non-caseating granulomas without obvious associated particles

BERYLIOSIS

UWORLD IMAGES

09:50



UWORLD IMAGES

09:50

B/L hilar LAD seen in sarcoidosis.

a systemic inflammatory disease characterised by involvement of

LUNG (reticular/nodular infiltrates)

LN (hilar)

SKIN (lupus pernio / erythema nodosum)

EYES (anr. uveitis)

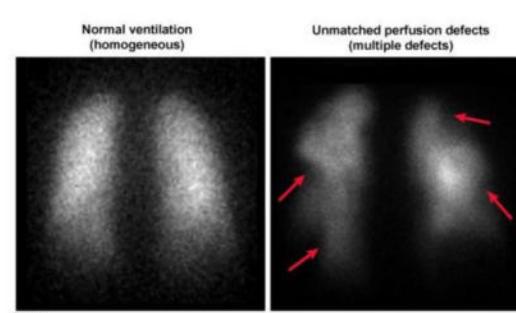
+

Constitutional Symptoms

(low grade fever, night sweats, wt. loss, arthralgia)

UWORLD IMAGES

09:50



UWORLD IMAGES

09:50

radio-nucleotide labelled V/Q scan.

2 part test :-

1st Part – radiolabelled aerosol, delivered to tracheobronchial tree.

2nd Part – iv tracer distributed to Pulmonary vasculature.

both result overlaid for comparison.

V/Q mismatch conditions where the test is abnormal,

Pul Embolism

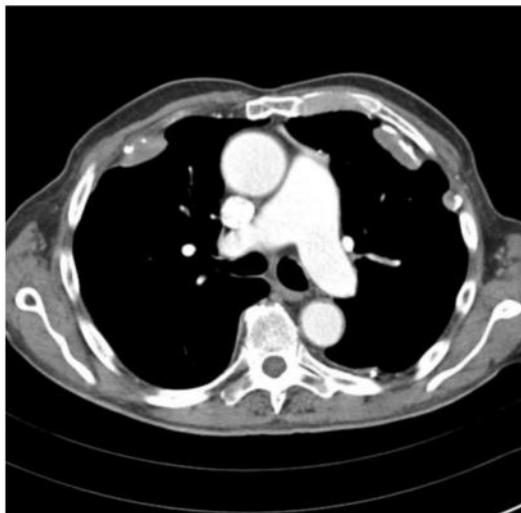
Malignancies that obstruct arterial blood

CT Pulmonary Angiogram is 1st Choice but V/Q Scan done when the former is C/I (contrast allergy, renal failure)

U

UWORLD IMAGES

09:50



U

UWORLD IMAGES

09:51

Pleural Plaques

(focal pleural thickening, due to chronic inflammation and collagen deposition within pleura)

Parietal Pleura usually involved.

asbestosis -->

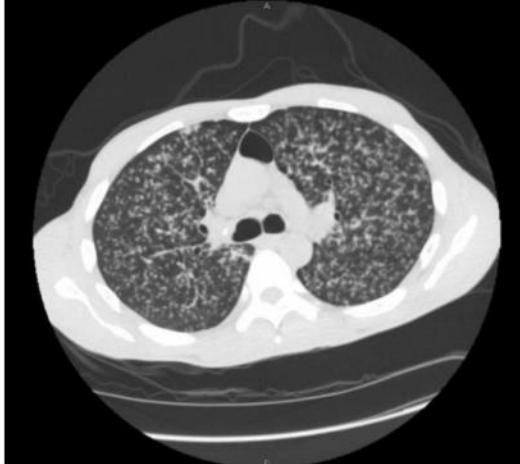
refers to slowly progressive, diffuse pulmonary fibrosis.

Lower lung zones usually involved.

U

UWORLD IMAGES

09:51



UWORLD IMAGES

miliary TB

09:51

UWORLD IMAGES

09:51



UWORLD IMAGES

multiple cancer metastasis

09:51

UWORLD IMAGES

09:52



UWORLD IMAGES

09:53

CECT --> large filling defect involving the Pulmonary artery bifurcation (saddle emboli) --> hemodynamic instability.

increased risk of thrombo-embolism in hospitalized patient.

reduced by administration of LMWH (enoxaparin, dalteparin).

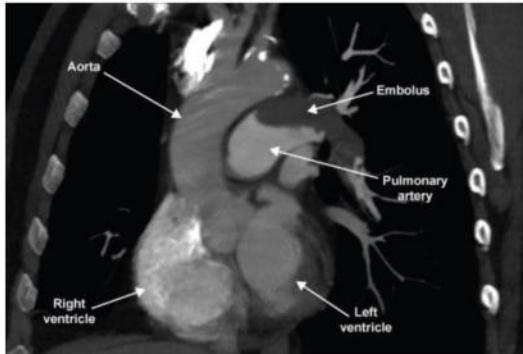
for acute treatment of massive PE,

Tissue Plasminogen Activator.

U

UWORLD IMAGES

09:53



U

UWORLD IMAGES

09:54



U

UWORLD IMAGES

09:54

hyperinflated lung on CXR

(narrowed mediastinum, flattened diaphragm)

U

UWORLD IMAGES

09:54

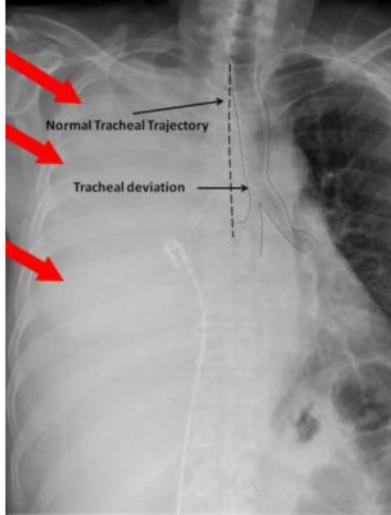
right hemithorax complete opacification --> Pleural Effusion

(shifting of the trachea to the opposite side)

U

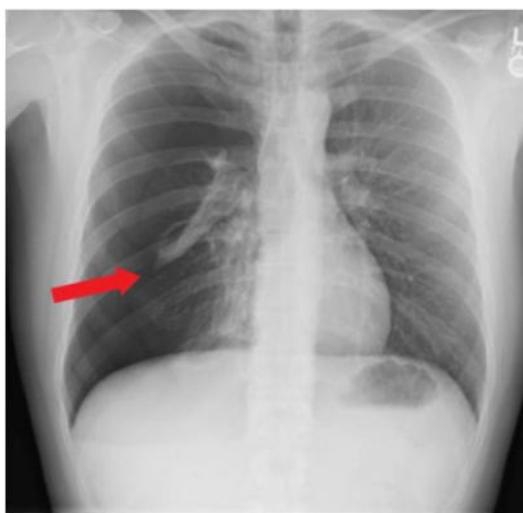
UWORLD IMAGES

09:54



UWORLD IMAGES

09:55



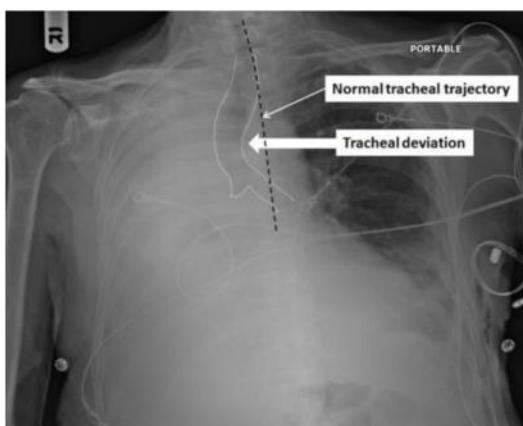
UWORLD IMAGES

09:55

right hemithorax increased lung opacity --> Pneumothorax

UWORLD IMAGES

09:55



UWORLD IMAGES

09:55

Right Mainstem bronchus obstruction -->

complete collapse of the lung

(foreign body, central lung tumors in chronic smokers)

U

UWORLD IMAGES

09:55



U

UWORLD IMAGES

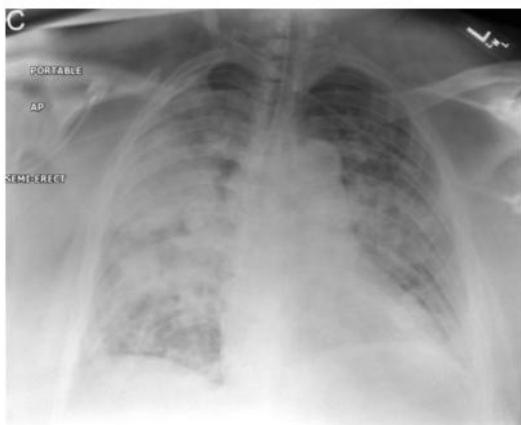
09:55

B/L reticular markings --> Interstitial Lung Disease (such as Pulmonary fibrosis)

U

UWORLD IMAGES

09:56



U

UWORLD IMAGES

09:56

fluid in the alveolar space (due to pulmonary edema)

appears as (B/L fluffy appearing infiltrates)

U

UWORLD IMAGES

09:56



UWORLD IMAGES

09:56

Complete opacification of the lung as a consequence of

"Mainstem Bronchus obstruction"

(foreign body, Central tumor in chronic smokers)

obstruction --> air is trapped distally -->

gets absorbed (loss of radiolucent appears as complete opacification of hemithorax) -->

loss of lung volume due to alveolar collapse (atelectasis) -->

tracheal deviation (and/or other mediastinal structures) towards the affected side.

DD :-

Pleural Effusion

(here the trachea would be pushed towards the opposite side)

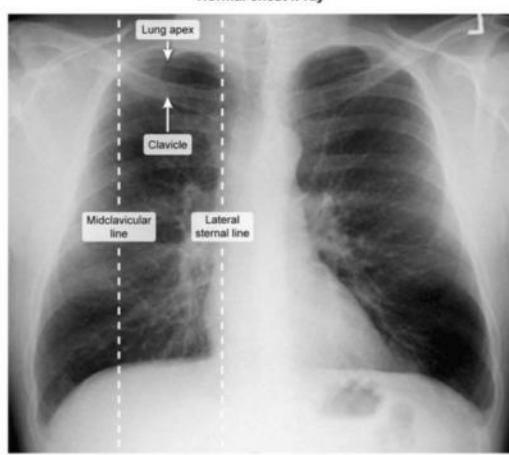
Tension Pneumothorax

(trachea pushed to the opposite side +
increased radiolucency on the affected side)

UWORLD IMAGES

09:56

U



U

UWORLD IMAGES

09:56

Stab wound in the neck b/w these two lines may damage the Pleura
-->

Pneumothorax, Hemothorax, Tension Pneumo.

Tension Pneumo -->

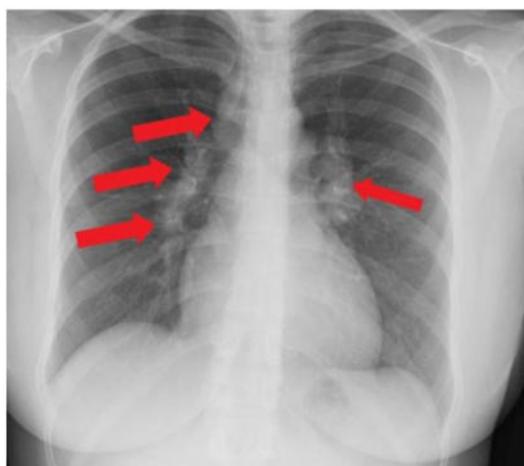
due to accumulation of air in chest --> decreased systemic venous return --> decreased Cardiac Output --> tachycardia/pneumonia, hypotension.

Shifting of trachea, mediastinum, lung to the OPPOSITE side.

U

UWORLD IMAGES

09:56



U

UWORLD IMAGES

09:56

B/L Hilar LAD

usually seen in Sarcoidosis

U

UWORLD IMAGES

09:56



U

UWORLD IMAGES

09:56

honeycomb pattern of Lung seen in Pulmonary Fibrosis.

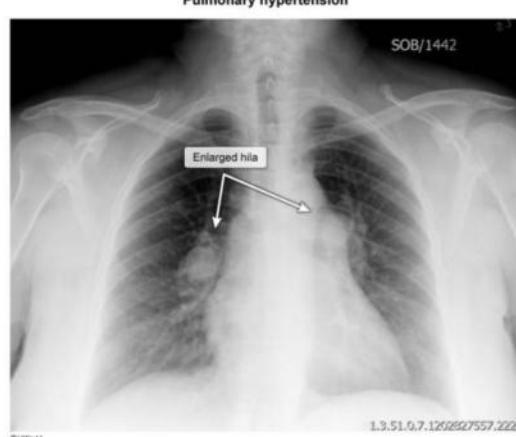
seen in advanced cases,

progressive fibrosis --> cystically dilated bronchioles --> coalesce to form this.

U

UWORLD IMAGES

09:57



U

UWORLD IMAGES

09:57

NOTE the enlargement of the Pulmonary Arteries

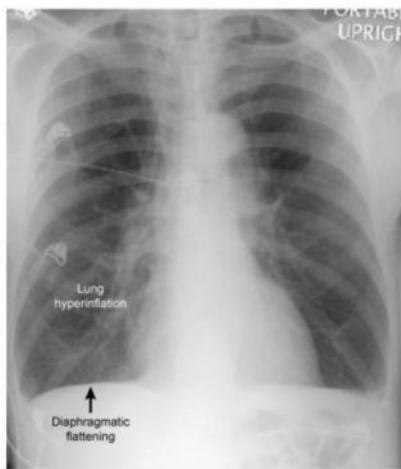
due to PULMONARY HTN.

U

UWORLD IMAGES

09:57

Chronic obstructive pulmonary disease



UWORLD IMAGES

09:57



UWORLD IMAGES

09:58

"cardiomegaly" (heart size >1 hemi-thorax)

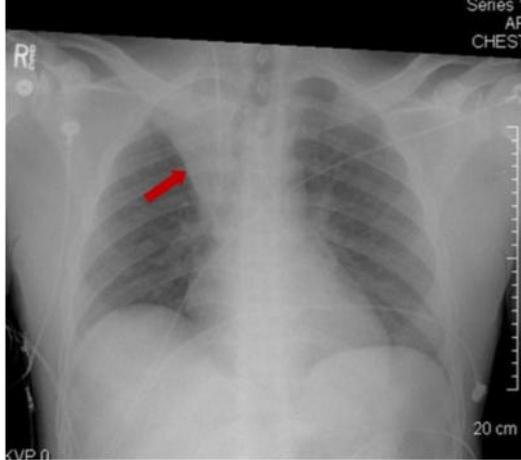
may be due to decompensated heart failure.

other CXR findings :-

pul. edema
pleural effusion
enlarged pulmonary vessels

UWORLD IMAGES

09:58



U

UWORLD IMAGES

09:58

"opacification (collapse) of the Right Upper lobe"

may be due to obstruction of the bronchus --> atelectasis (etle
decreased/dminished air volume in a part of the lung)

U

UWORLD IMAGES

09:58



U

UWORLD IMAGES

09:58

"scattered nodules and parenchymal infiltrates (or coarse reticular opacities)" on CXR

in Sarcoidosis

U

UWORLD IMAGES

09:58



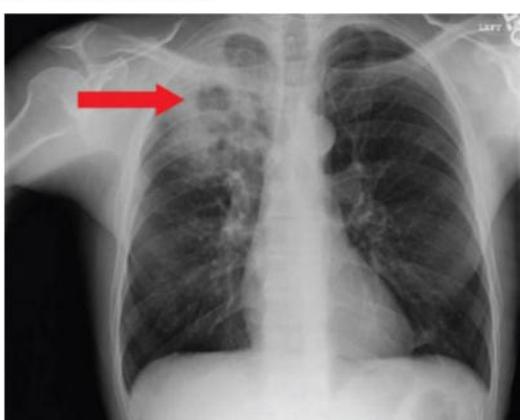
U UWORLD IMAGES

09:58

"innumerable, small, millet seed-like lesions" seen in Miliary TB.

U UWORLD IMAGES

09:58



U UWORLD IMAGES

09:58

Cavitation due to (Secondary/reactivation) M. TB infection.

dendritic cells/APCs secrete IL-12 -->

differentiation into Th-1 and production of IFN-gamma by T-Cells -->

activation of macrophages -->

development of mature phagolysosomes capable of destroying phagocytosed bacteria.

cavity (in UL) formation by TB infection takes months to develop vs

cavitations (LL) in lung abscess (2ndary to aspiration or pneumonia)

within days/weeks and mediated by lysosomal release from activated neutrophils and collateral damage to lung parenchyma.

U UWORLD IMAGES

09:59



UWORLD IMAGES

09:59

"PSP" – primary spontaneous pneumothorax

due to large change in alveolar pressure (typically in the apex regions, superficial alveoli) / change in the intra pleural pressure -->

formation of subpleural blebs --> rupture into the visceral pleura -->

Pneumothorax --> collapse of the adjacent lung tissue.

tall, thin people in their 20s

COMPENSATORY HYPERINFLATION

due to collapse of a lobe/ lung segment --> adjacent lung parenchyma expands.

OBSTRUCTIVE HYPERINFLATION

due to partial obstruction of the airway --> during expiration, air gets trapped behind --> hyperinflation

UWORLD IMAGES

09:59



U

UWORLD IMAGES

09:59

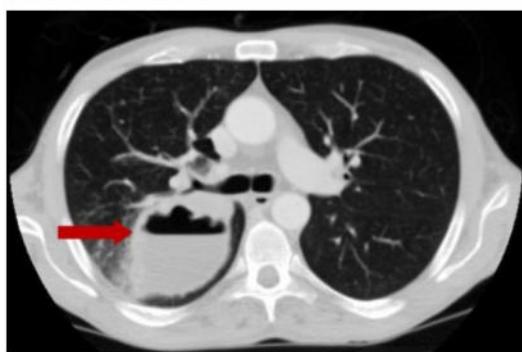
"right lobe pleural effusion"

decreased breath sounds / Tactile fremitus

U

UWORLD IMAGES

09:59



U

UWORLD IMAGES

09:59

"air-fluid level" due to

Lung Abscess

U

UWORLD IMAGES

09:59

Lung abscess



U

UWORLD IMAGES

10:00

"air-fluid level" due to cavitation (Lung abscess)

on BAL --> Culture..

organisms cultured gives clue to the etiology.

Commonly due to :-

1. Oropharyngeal aspiration --> due to any etiology causing LOC (seizures, drug abuse, alcoholism)

anaerobic flora of the mouth (foul smelling sputum)

2. Bacterial Pneumonia --> Abscess (esp in old age, hospitalised, immunosuppression)

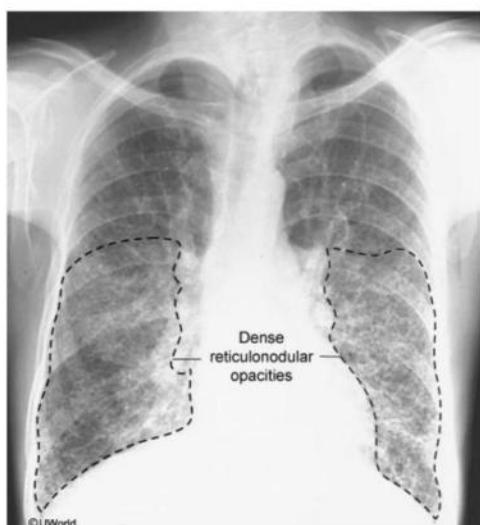
Staph, Klebsiella, Pseudomonas

3. Bacteremia/ IE --> hematogenous spread

staph, strep.

UWORLD IMAGES

10:00



UWORLD IMAGES

10:00

in Idiopathic Pulmonary Fibrosis

causing pulmonary fibroblast proliferation and extra-cellular matrix deposition -->

progressive destruction of the pulmonary architecture.

UWORLD IMAGES

10:00



UWORLD IMAGES

10:00

Interstitial Pneumonia

note the patchy infiltration/consolidation

UWORLD IMAGES

10:00



U

UWORLD IMAGES

10:00

"right sided lobar consolidation"

Pneumonia

3 morphological categories :-

1. Lobar Pneumonia

2. Bronchopneumonia –

"infection of the terminal bronchioles"

on CXR – patchy consolidation of a number of lobules.

3. Interstitial Pneumonia/Atypical

"involvement of the interstitial tissue of the lung with no/minimum alveolar infiltrate"

caused by mycoplasma/chlamydia.

U

UWORLD IMAGES

10:00



U

UWORLD IMAGES

10:00

"perihilar alveolar edema with cephalization of the pulmonary vessels"

also note the cardiomegaly.

HF --> elevated PCWP --> Pul. Edema (accumulation of fluid in the alveoli)

pt will have bibasilar crackles on examination

U

UWORLD IMAGES

10:00



U

UWORLD IMAGES

10:00

"Right lower lobe consolidation"

in pneumonia, pt has

increased bronchial breath sounds

late inspiratory crackles

egophony (inc. resonance of voice sounds)

pectoriloquy (whispered sounds heard by auscultation ; E -->A)

U

UWORLD IMAGES

10:01



U

UWORLD IMAGES

10:01

renal size discrepancy

note the shrunken, atrophic left kidney with compensatory hypertrophy of the right kidney.

due to atherosclerosis causing Renal artery Stenosis.

pt. normally presents with S/S hinting at involvement of other organs.

Chronic Mesenteric Ischemia

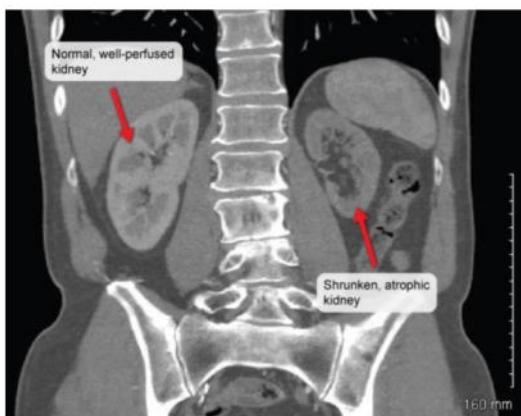
(post-prandial diffuse, non localising abd. pain, wt. loss)

Angina

with history of smoking, DM, dyslipidemia, HTN.

UWORLD IMAGES

10:01



UWORLD IMAGES

10:01



UWORLD IMAGES

10:01

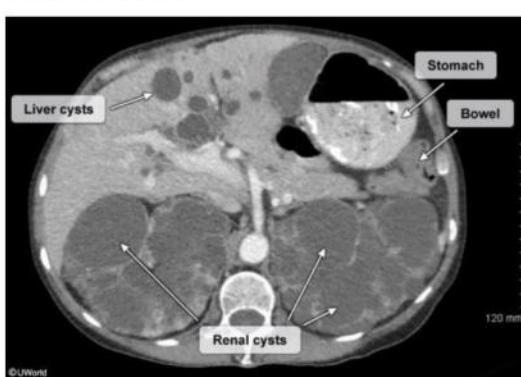
"B/L thin walled, non enhancing cystic fluid containing lesions"

ADPKD

also note the hepatic cysts.

UWORLD IMAGES

10:02



UWORLD IMAGES

10:02

U



U

UWORLD IMAGES

10:02

"solid, heterogeneous renal mass with patchy enhancement"

Nephroblastoma -

M/C pediatric renal malignancy.

child presents with

hematuria,
abdominal pain,
hypertension

U

UWORLD IMAGES

10:03



U

UWORLD IMAGES

10:03

"dilation of renal pelvis and calyces"

seen in hydronephrosis

U

UWORLD IMAGES

10:03



U

UWORLD IMAGES

10:03

"Struvite Stone" with atrophic left kidney

Pt. has h/o chronic UTI

S/S due to Infection

[fever,

"mild-moderate" flank pain vs (acute renal colic seen in other stones)]

hematuria in this condition may result due to irritation of urothelium by the Stone (RBCs will have normal morphology vs dysmorphic RBCs in Glomerular diseases)

infection with urease producing organisms
(klebsiella, proteus)

ph of the urine will be alkaline (which precipitates crystallisation)

U

UWORLD IMAGES

10:03



U

UWORLD IMAGES

10:03

"U/L left kidney mass"

RCC

Polycystic Kidney Disease :-

presents with B/L kidney "Cysts" ; flank pain is common

U

UWORLD IMAGES

10:04



U

UWORLD IMAGES

10:04

"mass in the bladder"

Bladder Cancer (painless hematuria and weight loss)

DD :-

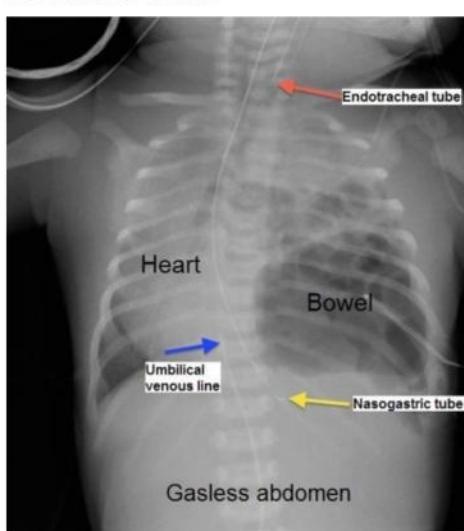
RCC

ELDERLY ma gross painless hematuria --> suspect above two.

U

UWORLD IMAGES

10:04



U

UWORLD IMAGES

10:04

Congenital Diaphragmatic Hernia

neonate have "U/L absent breath sound" and

pulmonary hypertension.

U

UWORLD IMAGES

10:04



U

UWORLD IMAGES

10:04

HORSESHOE Kidney

U

UWORLD IMAGES

10:04

Osgood-Schlatter disease



U

UWORLD IMAGES

10:04

Osgood Schlatter disease (traction apophysitis)

in adolescents, after growth spurt --> increased tension on tendons and ligaments

And repetitive movements/sports activity causes chronic avulsion of the Tibial tubercle (which has a secondary ossification centre [apophysis])...

U

UWORLD IMAGES

10:04



UWORLD IMAGES

10:04



UWORLD IMAGES

10:04

"Clavicle Fracture"

usually is displaced.

anterior head of deltoid + weight of the UL
pulls the distal end in "Inferio-lateral" direction

while

SCM + Trapezius
pulls the medial end in "Superio-Medial Direction"

hence, high chances of non-union.

UWORLD IMAGES

10:05



UWORLD IMAGES

10:05

U

A – Rectus Abdominis

(plays the most important role in elevating intra abdominal and intra thoracic pressure while doing Valsalva)

Valsalva/ Vagus Nerve Stimulation (by carotid sinus massage) results in increasing the refractory period at the AV Node, hence preventing the re-entrant circuit from conducting in PSVT.

iv adenosine (2nd line)

B – Iliacus

C – Gluteus Minimus

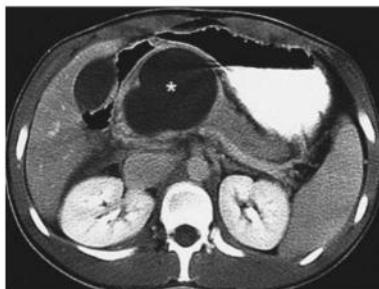
D – Gluteus Medius (both these muscles prevent the Non-Weight bearing hip from falling); supplied by Superior Gluteal Nerve

E – Gluteus Maximus ; supplied by Inferior Gluteal Nerve

UWORLD IMAGES

10:06

U



UWORLD IMAGES

10:06

U

Pancreatic PSEUDOCYST (located behind the stomach, in the LESSER PERITONEAL SAC)

pseudo means "NOT lined by epithelium"

forms 4–6 week after an episode of acute pancreatitis.

composed of granulation and fibrotic tissue.

Pancreatic secretions damaging the ductal system (during the episode)

-->

collection of these secretions in the peri-pancreatic space causes INFLAMMATION -->

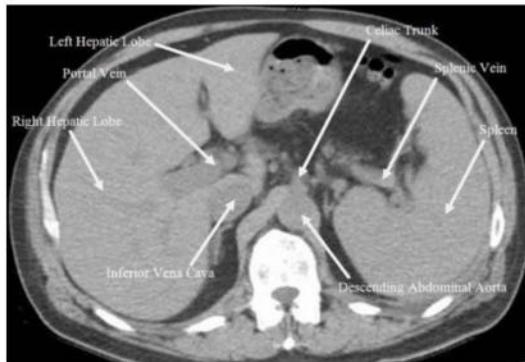
formation of granulation and fibrotic tissue.

may communicate with any nearby hollow structures (Stomach, Duodenum, Transverse Colon)

U

UWORLD IMAGES

10:06



U

UWORLD IMAGES

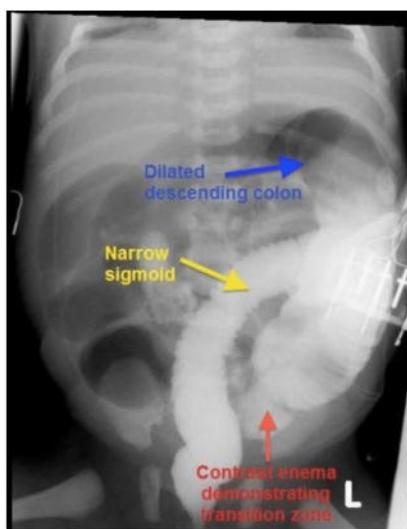
10:06

CT section at T12/L1 (origin of Celiac trunk)

U

UWORLD IMAGES

10:06



U

UWORLD IMAGES

10:06

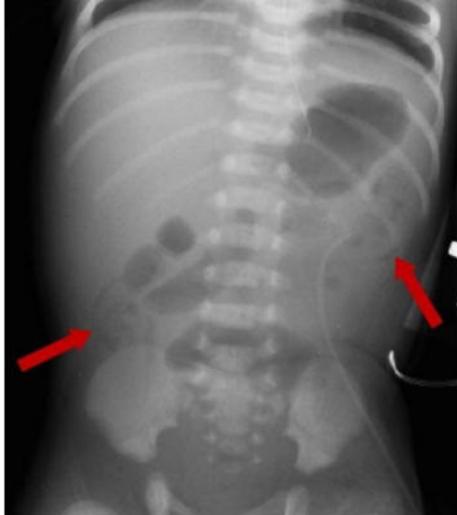
Hirschsprung disease

note the normal caliber of the transition zone

U

UWORLD IMAGES

10:06



UWORLD IMAGES

10:07

"Thin Curvilinear area of lucency"

PNEUMATOSIS INTESTINALIS (air in the small bowel)

when occurring in conjunction with

abdominal distension and bloody stool is diagnostic for

NECROTIZING ENTEROCOLITIS (in premature neonates)

UWORLD IMAGES

10:07



UWORLD IMAGES

10:07

"Small Bowel Obstruction"

dilated small bowel with multiple air–fluid levels.

UWORLD IMAGES

10:07

U



UWORLD IMAGES

10:07

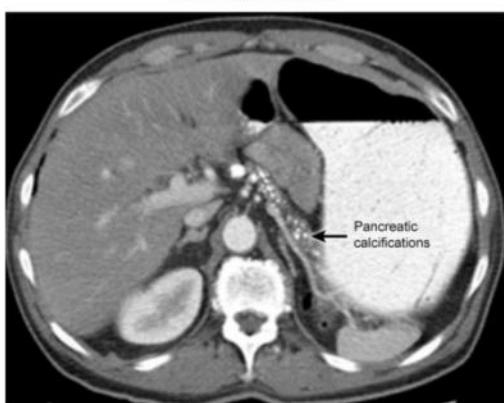
"Calcified Gall Bladder"/ "Porcelain GB" due to chronic Cholecystitis

increased risk of adenocarcinoma of GB.

UWORLD IMAGES

10:07

Chronic pancreatitis



UWORLD IMAGES

10:07

"Calcifications in Pancreas"

due to Chronic Alcoholic Pancreatitis.

Pathogenesis :-

Alcohol induced Protein Rich secretions --> precipitate --> plug the ducts --> calcification and fibrosis --> Exocrine Pancreatic Insufficiency.

Pt presents with Chronic Diarrhea, Malabsorption and Steatorrhea.

UWORLD IMAGES

10:07

U



UWORLD IMAGES

10:07

"Spleen" – a wedge shaped Mesodermal derived structure located in the Posterior-Superior Quadrant of the Abdominal Cavity.

Mesoderm --> Mesenchymal Tissues

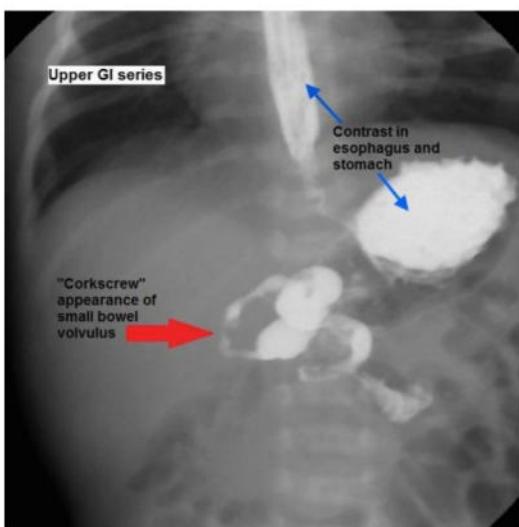
Notochord too is of the same origin.

Its remnant is the Nucleous Pulposus in the IVD of the vertebral column.

U

UWORLD IMAGES

10:07



U

UWORLD IMAGES

10:08

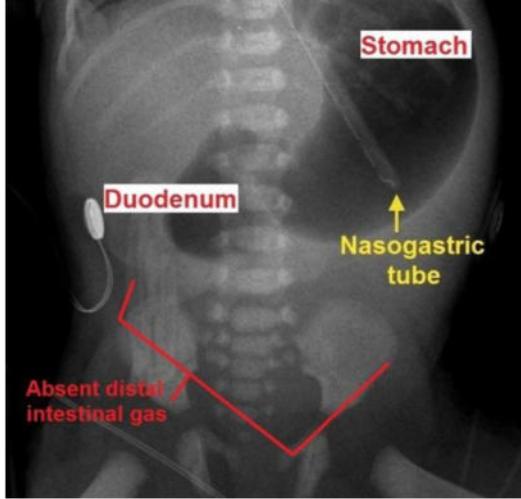
"Mid Gut Volvulus"

may be due to Malrotation of the Gut during development, resulting in narrow base of Mesentery (whose normal function is to hold the intestinal structures at their places)

U

UWORLD IMAGES

10:09



UWORLD IMAGES

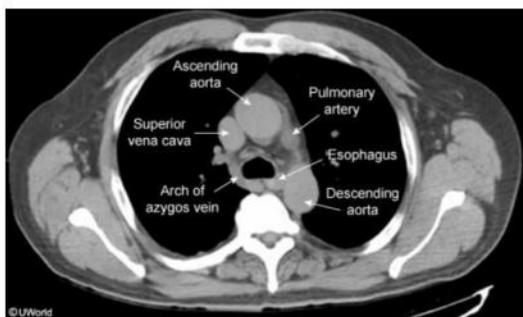
10:09

Double Bubble Sign

seen in Duodenal Atresia (due to failure of recanalisation)

UWORLD IMAGES

10:11



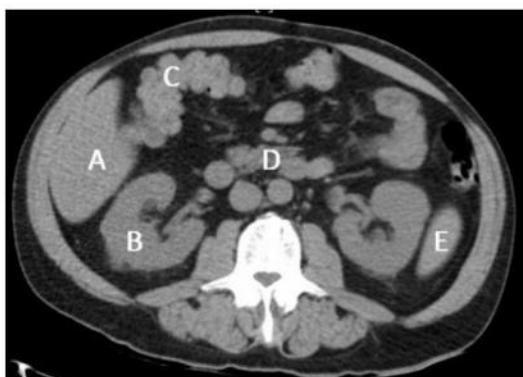
UWORLD IMAGES

10:11

CT Scan @ the level of Arch of Aorta

UWORLD IMAGES

10:11



UWORLD IMAGES

10:11

A – Liver

B – Kidney

C – First 2/3rd of Transverse Colon

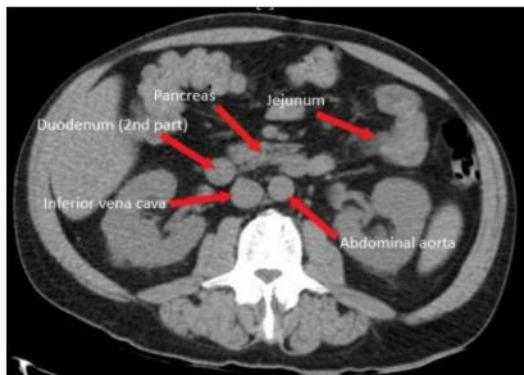
D – Pancreas (hence @ L2 Level)

E – Tail of Spleen

Spleen is the most common Intra-Abdominal organ damaged by blunt trauma.

UWORLD IMAGES

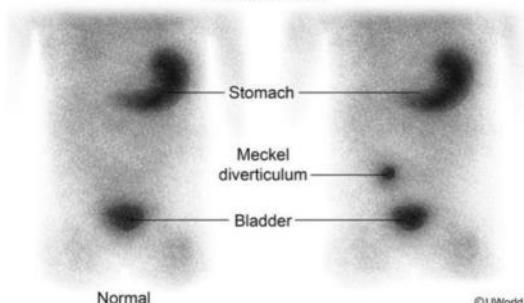
10:11



UWORLD IMAGES

10:13

Meckel scan



©UWorld

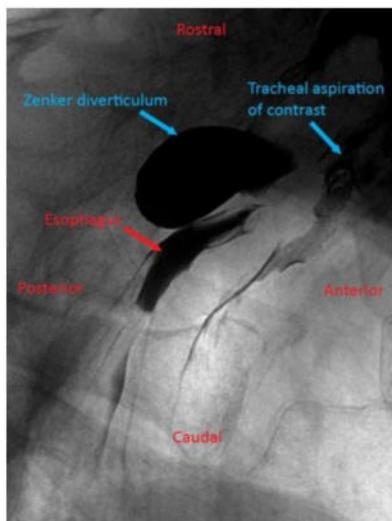
UWORLD IMAGES

10:13

99Tc Pertechnate has affinity for Parietal cells of the Gastric Mucosa.

UWORLD IMAGES

10:13

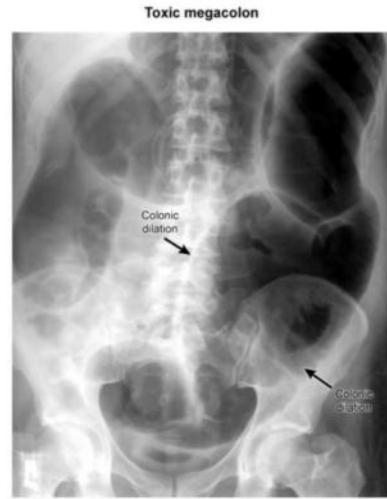


due to "Cricopharyngeal Motor Dysfunction"

a false diverticular.

Mediastinal Lymphadenitis/ Meckel's D. is an example of True Diverticula (which contains all the 3 layers).

The former happens in the mid portion of the esophagus due to infections such as TB/Fungal which results in scarring and consequent Traction.



"Colonic Dilation" seen in a pt with TOXIC MEGACOLON.

a common complication in UC Patients.

Toxic – refers to fever, shock

Megacolon – rapid dilation of the colon (due to rapid release of inflammatory cytokines and nitric oxide which causes Intestinal Smooth Muscle Dilation)

Air Fluid levels too can be seen.



UWORLD IMAGES

10:14

U

ACL

UWORLD IMAGES

10:14

U



UWORLD IMAGES

10:14

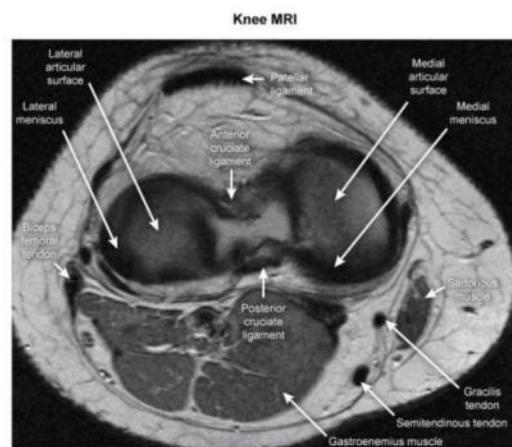
U

PCL

UWORLD IMAGES

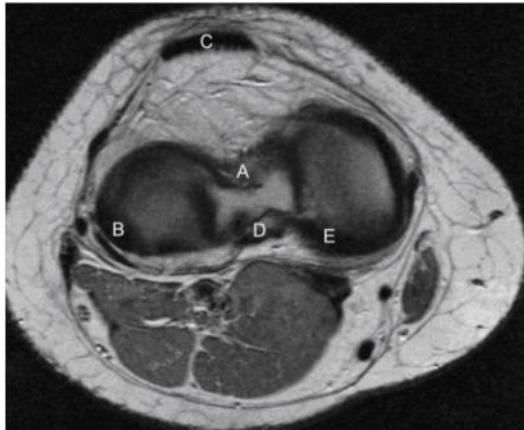
10:14

U



U**UWORLD IMAGES**

10:14

**U****UWORLD IMAGES**

10:14

A = Anterior Cruciate Ligament

B = Lateral Meniscus

C = Patellar Ligament

D = Posterior Cruciate Ligament

E =

U**UWORLD IMAGES**

10:14

**U****UWORLD IMAGES**

10:14

fracture of neck of femur – Osteonecrosis

U**UWORLD IMAGES**

10:15



U

UWORLD IMAGES

10:15

"Scaphoid Fracture" caused by FOOSH

- along the axial axis
- or
- hyperextension of the Wrist.

U

UWORLD IMAGES

10:15



U

UWORLD IMAGES

10:15

"Psoas Major" @ T12 Level

U

UWORLD IMAGES

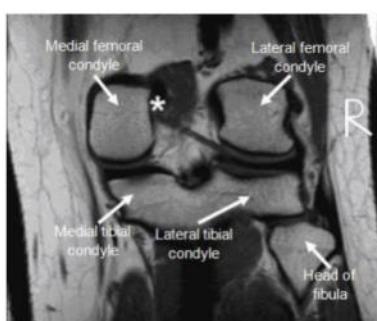
10:15



U

UWORLD IMAGES

10:15



U

UWORLD IMAGES

10:15

* = Site of Insertion of Posterior Cruciate Ligaments

U

UWORLD IMAGES

10:16



UWORLD IMAGES

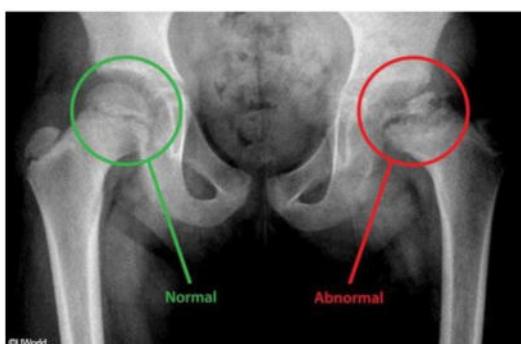
10:16

"Psoas Muscle"

Psoas Abscess

UWORLD IMAGES

10:17



UWORLD IMAGES

10:17

"Leg Calves Perthes Disease"

typically causes idiopathic Osteonecrosis in young Children.

UWORLD IMAGES

10:52



UWORLD IMAGES

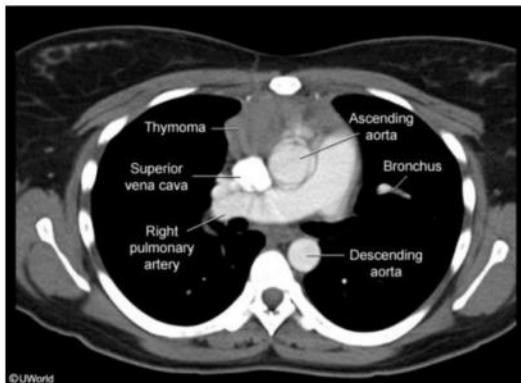
10:52

- A - "Trapezium"
B - "Capitate"
C - "Scaphoid"
D - "Lunate"
E - "Triquetrum"

U

UWORLD IMAGES

10:53



U

UWORLD IMAGES

10:53

"ULNAR DEVIATION" in Rheumatoid Arthritis.

U

UWORLD IMAGES

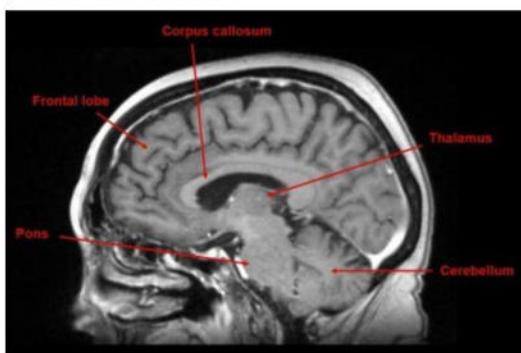
10:53



U

UWORLD IMAGES

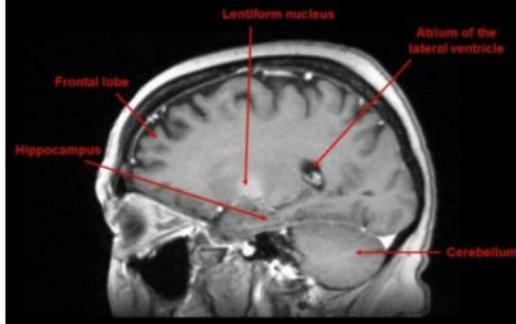
10:53



U

UWORLD IMAGES

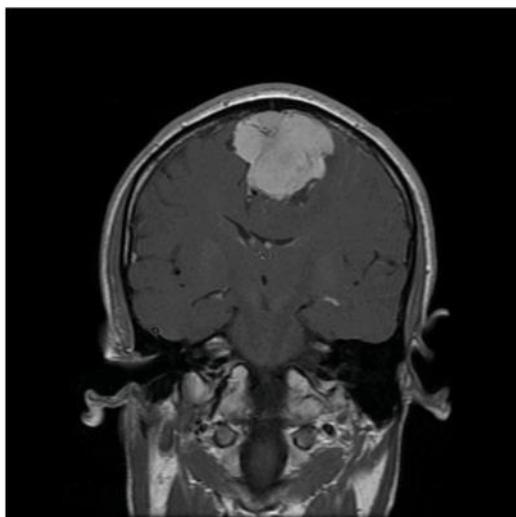
10:53



U

UWORLD IMAGES

10:53



U

UWORLD IMAGES

10:53

Meningiomas (at falcine location)

normally found in falcine, parasagittal and lateral convexities of brain.

PSaMMoma Bodies

Papillary Thyroid Carcinoma

Serous Cystadenoma of Ovary and Endometrium

Meningioma

Malignant Mesothelioma

U

UWORLD IMAGES

10:54



U

UWORLD IMAGES

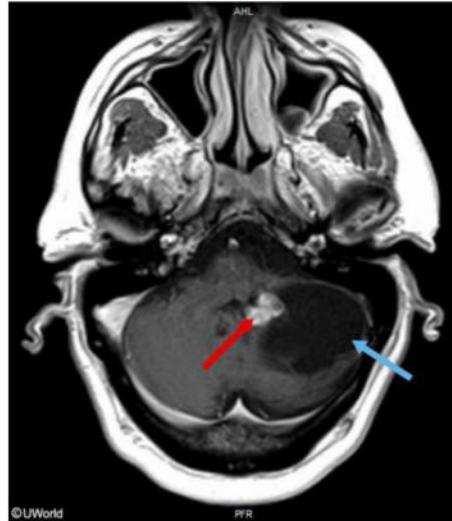
10:54

hydrocephalus ex vacuo

U

UWORLD IMAGES

10:54



UWORLD IMAGES

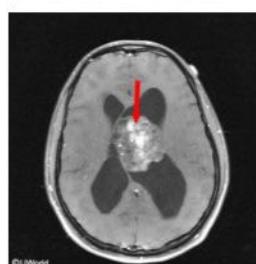
10:54

HEMANGIOBLASTOMA

U

UWORLD IMAGES

10:54



UWORLD IMAGES

10:54

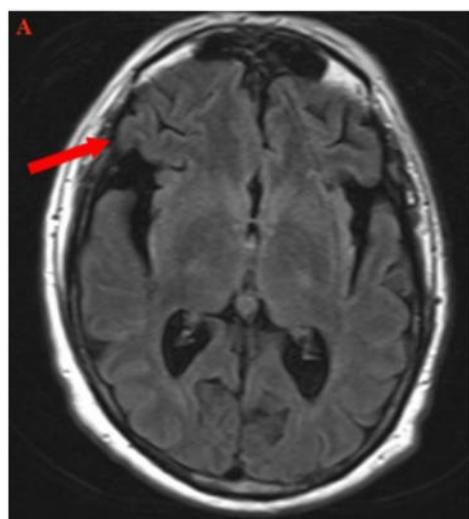
OBSTRUCTIVE HYDROCEPHALUS :-

ventriculomegaly associated with increased Intra Cranial Pressure

U

UWORLD IMAGES

10:55



U

UWORLD IMAGES

10:55

atrophy of frontal and temporal lobes in

FRONTO-TEMPORAL DEMENTIA

U

UWORLD IMAGES

10:55



U

UWORLD IMAGES

10:55

hydrocephalus ex-vacuo

ventriculomegaly in proportion to Sulci enlargement...

ALZHEIMER'S ma "Global Cerebral Atrophy" thay

U

UWORLD IMAGES

10:55



U

UWORLD IMAGES

10:55

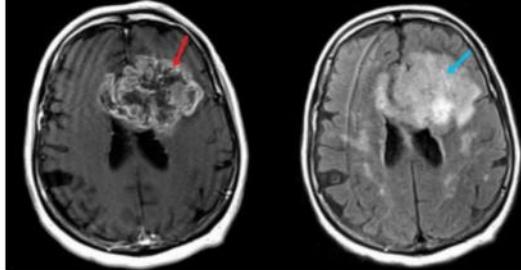
Communicating Hydrocephalus

(ventriculomegaly out of proportion to sulci enlargement)

U

UWORLD IMAGES

10:55



UWORLD IMAGES

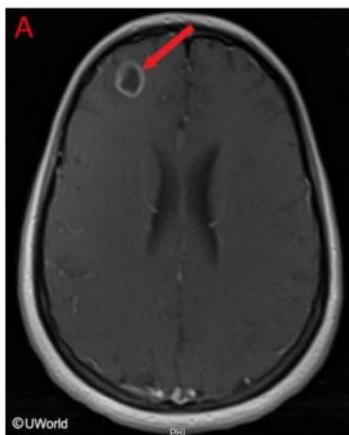
10:55

Glioblastoma multiforme

U

UWORLD IMAGES

10:56



UWORLD IMAGES

10:56

Single Ring Enhancing lesion of 2 cm

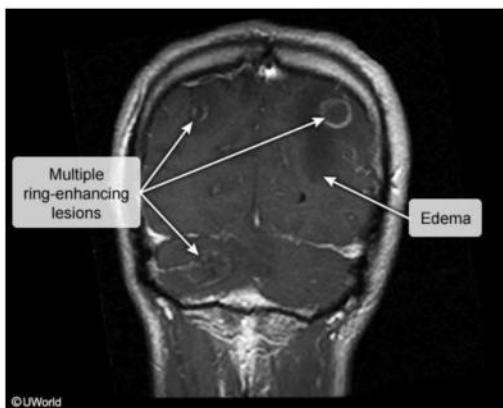
U

Brain ABscess

number and location – for DD/ETIOLOGY

UWORLD IMAGES

10:56



U

UWORLD IMAGES

10:56

"multiple ring enhancing lesions"

U

seen in HIV Patient due to T. Gondi.

vs

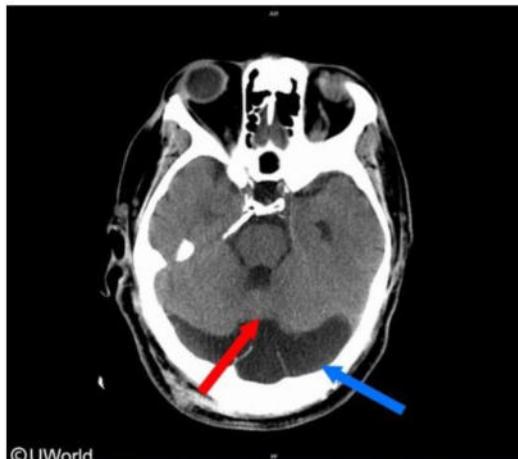
Single Ring Enhancing lesion caused due to Primary CNS Lymphoma (due to EBV)

Ch. by presence of atypical lymphocytes which are actually B-LYMPHOCYTES.

U

UWORLD IMAGES

10:56



U

UWORLD IMAGES

10:56

Red Arrow - "Hypoplasia of cerebellar Vermis"

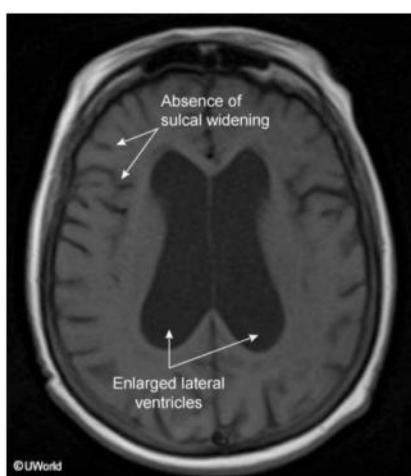
Cystic Dilation of Fourth Ventricle with (blue arrow) Posterior Fossa Enlargement.

Dandy Walker Malformation

U

UWORLD IMAGES

10:56



U

UWORLD IMAGES

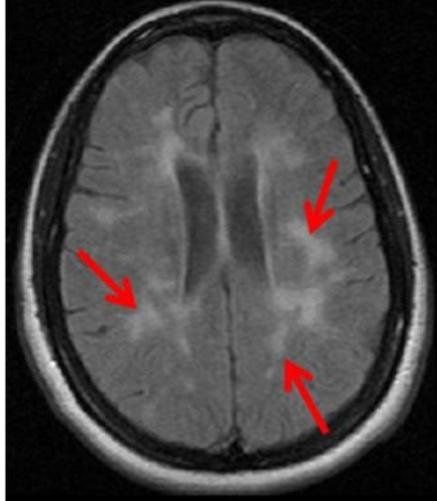
10:57

NPH

U

UWORLD IMAGES

10:57



UWORLD IMAGES

10:57

"Demyelination Plaques" seen as Hyper Intense Lesions on T2 weighted MRI in MS.

U

UWORLD IMAGES

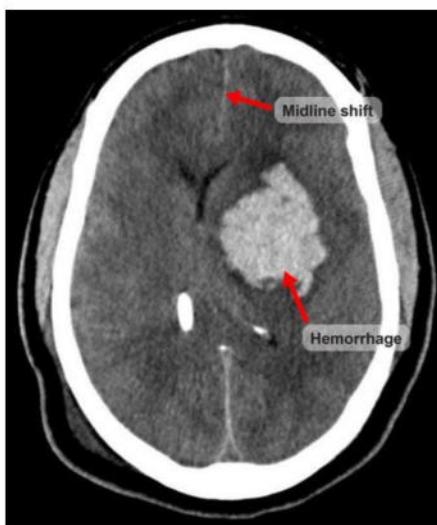
10:57

Multiple sclerosis

U

UWORLD IMAGES

10:57



UWORLD IMAGES

10:58

U



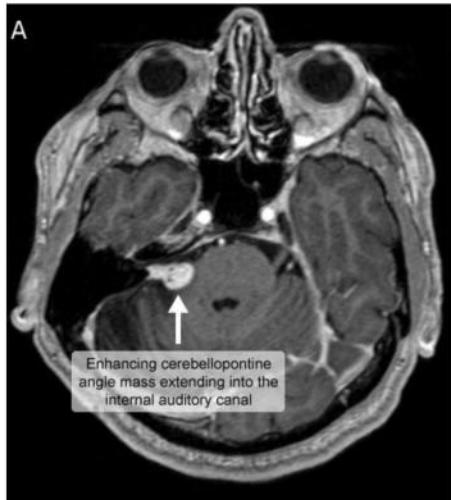
UWORLD IMAGES

10:58

Putamenal hemorrhage caused rupture of Lenticulostriate Vessels.

UWORLD IMAGES

10:58



UWORLD IMAGES

10:58



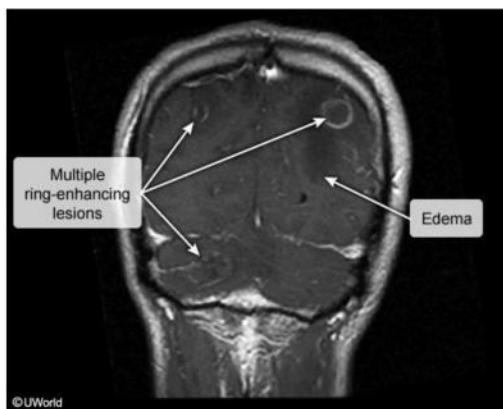
UWORLD IMAGES

10:58

U/L involvement of Temporal Lobe in HSV-1 infections [MRI].

UWORLD IMAGES

10:58



UWORLD IMAGES

10:58

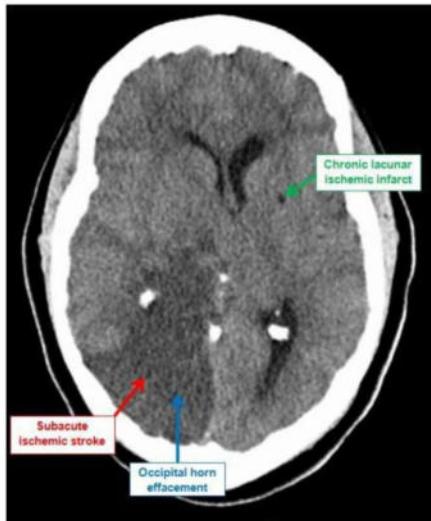
Ring Enhancing Lesions caused by T. Gondii (in immunocompromised)

affecting frontal and other lobes.

U

UWORLD IMAGES

10:59



U

UWORLD IMAGES

10:59

PCA embolic stroke

U

UWORLD IMAGES

11:00



U

UWORLD IMAGES

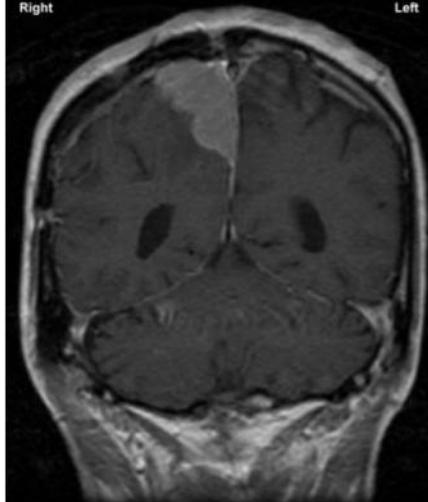
11:00

MCA stroke

U

UWORLD IMAGES

11:00



U UWORLD IMAGES

11:01

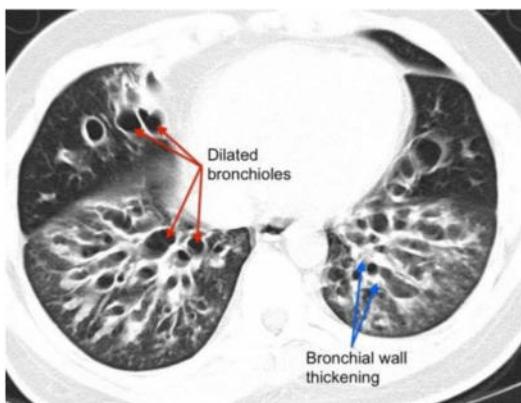
Well circumscribed Meningioma – affecting the Pre Frontal and Parietal Association Area resulting in

LL (weakness) and Hemi Sensory Neglect.

The patient has progressive Neurological Symptoms vs Sudden (in strokes)

U UWORLD IMAGES

11:01



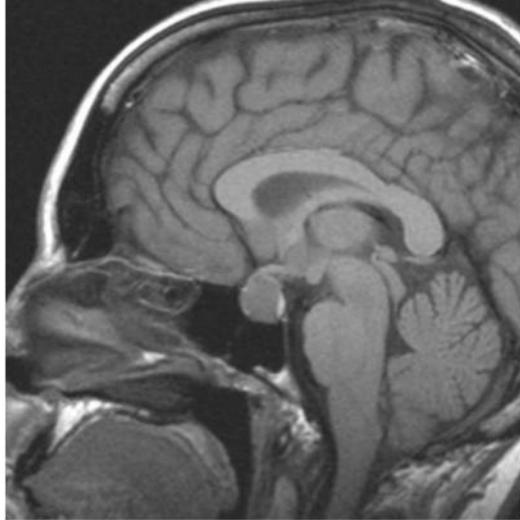
U UWORLD IMAGES

11:02

Bronchiectasis

U UWORLD IMAGES

11:02



UWORLD IMAGES

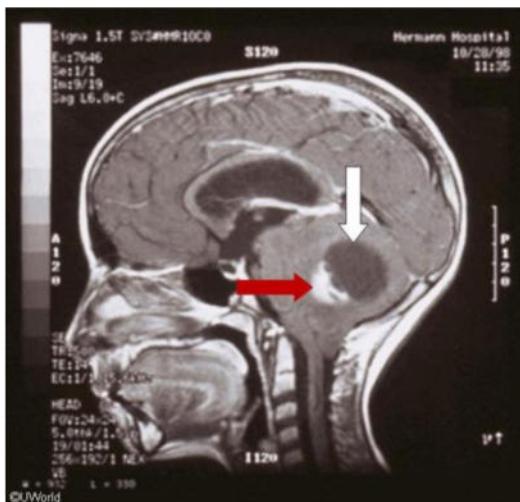
11:03

"PITUTARY ADENOMA"

Visual defect – "Bitemporal Hemianopia"

UWORLD IMAGES

11:03



UWORLD IMAGES

11:03

white arrow – "Solid lesion"
red arrow – "Cystic Lesion"

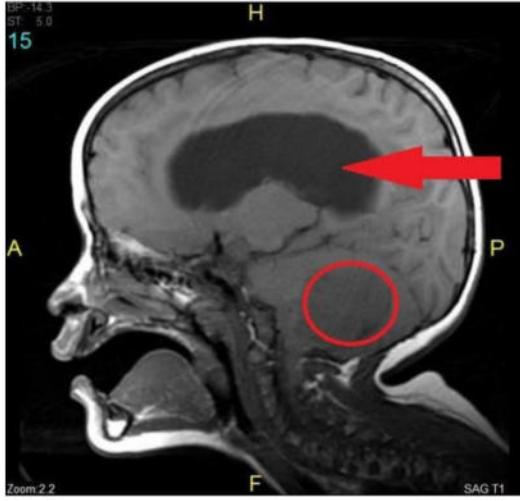
characteristic of GFAP +ve PILOCYTIC ASTROCYTOMA.
M/C brain tumor of childhood.
arising from Astrocytes.

characteristic pathological finding :-

"Rosenthal Fibres" (intracytoplasmic eosinophilic inclusions)
"hairlike processes"

UWORLD IMAGES

11:03



U

UWORLD IMAGES

11:03

"solid mass in Cerebellum" – MEDULLOBLASTOMA

M/C Malignant childhood Brain Tumor.

obstructs the 4th Ventricle causing Hydrocephalus (arrow).

composed of small cells with hyperchromatic nuclei forming Homer Wright Rosettes.

U

UWORLD IMAGES

11:03



U

UWORLD IMAGES

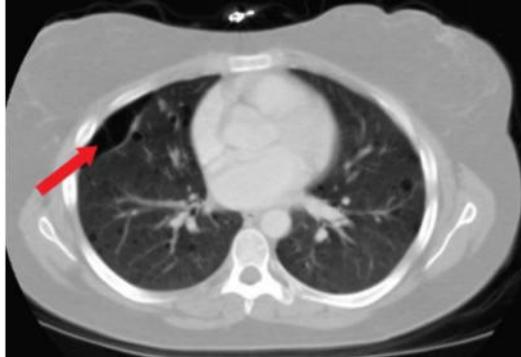
11:03

PULMONARY METASTASIS

U

UWORLD IMAGES

11:03



UWORLD IMAGES

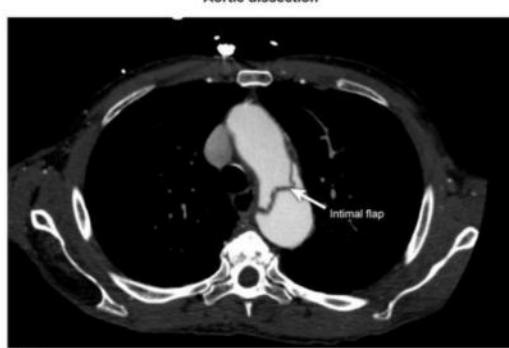
11:03

Ruptured Pulmonary Bleb (thin walled, air filled sub pleural structure) results in Pneumothorax.

found in Emphysema

UWORLD IMAGES

11:04



UWORLD IMAGES

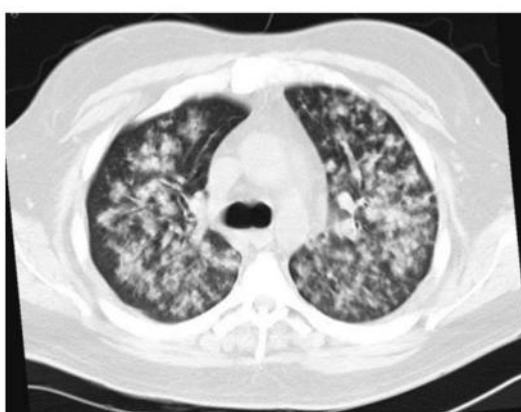
11:04

Aortic Dissection

intimal tear ; manifests as severe Chest Pain radiating to back.

UWORLD IMAGES

11:04



UWORLD IMAGES

11:04

PULMONARY HEMORRHAGE



UWORLD IMAGES

11:04

CHEST CT :-

Saddle Embolus :- straddles the bifurcation of MAIN PULMONARY ARTERY.

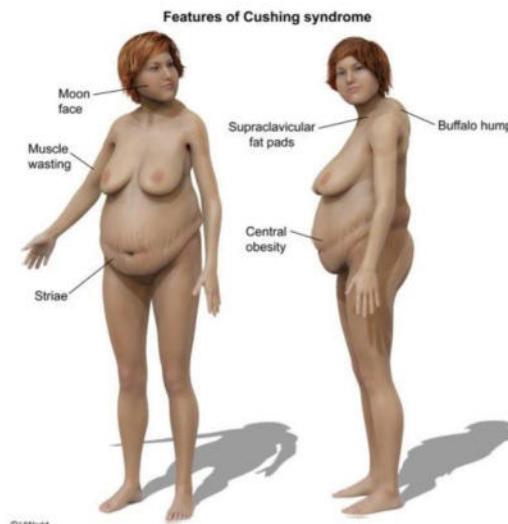
Sudden onset Pleuritic Chest Pain (tightness of chest), dyspnea with a history indicating a HYPERCOAGULABLE STATE.

Malignancy is a risk factor of Venous Thromboembolism.

11 April 2020

UWORLD IMAGES

01:19



UWORLD IMAGES

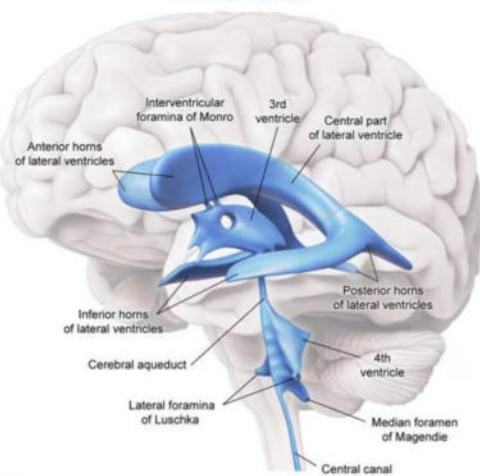
10:31

CSF – ventricular system

UWORLD IMAGES

10:31

Ventricular system

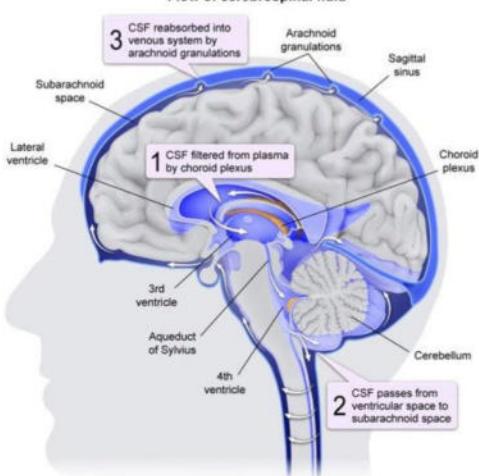


UWORLD IMAGES

10:31

U

Flow of cerebrospinal fluid



UWORLD IMAGES

22:44

U

UWORLD IMAGES

22:45

A

ANTERIOR JAW DISLOCATION



Anterior jaw dislocation

Pharmacotherapy for supraventricular tachycardia

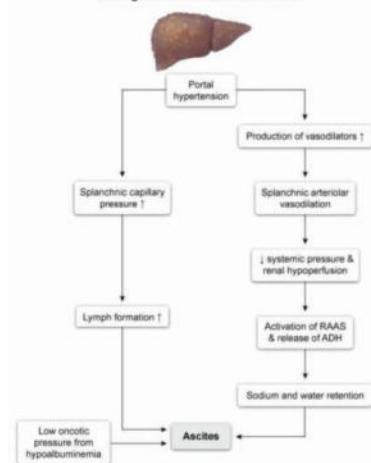
Medication	Short-term adverse effects
Flecainide/propafenone (class IC)	<ul style="list-style-type: none"> Monomorphic VT*
Metoprolol (class II)	<ul style="list-style-type: none"> Bradycardia & advanced AV block
Amiodarone (class III)	<ul style="list-style-type: none"> Bradycardia Hepatic toxicity, thyroid dysfunction
Ibutilide/dofetilide/sotalol (class III)	Torsade de pointes
Verapamil/diltiazem (class IV)	<ul style="list-style-type: none"> Bradycardia & advanced AV block Decreased ventricular contractility Constipation (verapamil)
Adenosine	<ul style="list-style-type: none"> Flushing & hypotension Bronchospasm High-grade AV block
Digoxin	<ul style="list-style-type: none"> Bradycardia & other arrhythmias Nausea & vomiting ± visual disturbances

*Especially a concern with ischemic or structural heart disease.

AV = atrioventricular; VT = ventricular tachycardia.

Ascites in cirrhosis

Pathogenesis of ascites in cirrhosis



ADH = antidiuretic hormone; RAAS = renin-angiotensin-aldosterone system.

©UWorld

14 April 2020

Lipoma

HIPOMA



most commonly present on the trunk or proximal arms.
Lipomas do not transilluminate.

U

UWORLD IMAGES

20:59

Ganglion cyst

U

UWORLD IMAGES

20:59

GANGLION CYST



Ganglion cyst	
Pathophysiology	• Mixed degeneration of periarticular tissue • Mucinous fluid collects via a 3-way valve mechanism
Presentation	• Usually painless but can cause mild aching or compressive symptoms • A smooth, rubbery, round structure that overlies a joint or tendon • & transilluminates
Management	• Usually resolves spontaneously

Physical examination reveals a smooth, rubbery, round structure that overlies a joint or tendon and transilluminates with a penlight. Most ganglion cysts resolve spontaneously without intervention.

U

UWORLD IMAGES

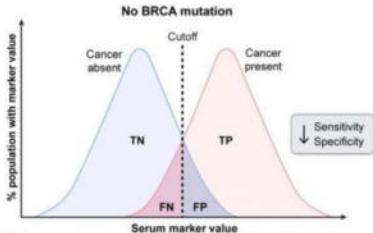
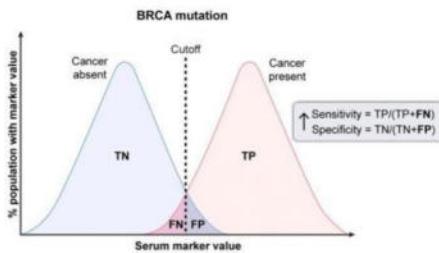
22:10

Sensitivity Specificity

U

UWORLD IMAGES

22:10



U

UWORLD IMAGES

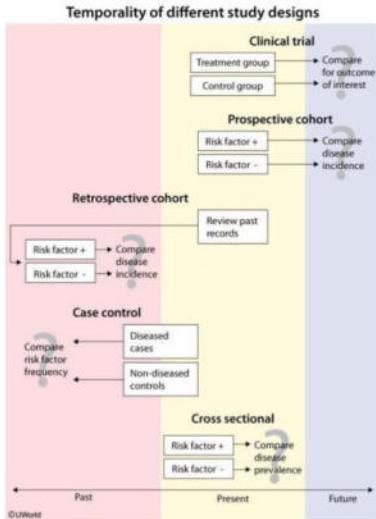
22:16

Study designs

U

UWORLD IMAGES

22:17



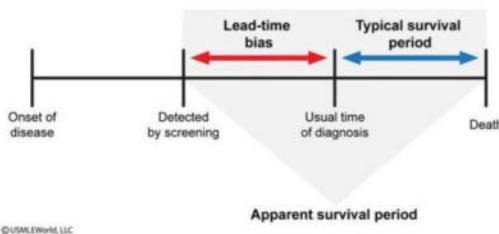
UWORLD IMAGES

22:21

Lead time bias

UWORLD IMAGES

22:21



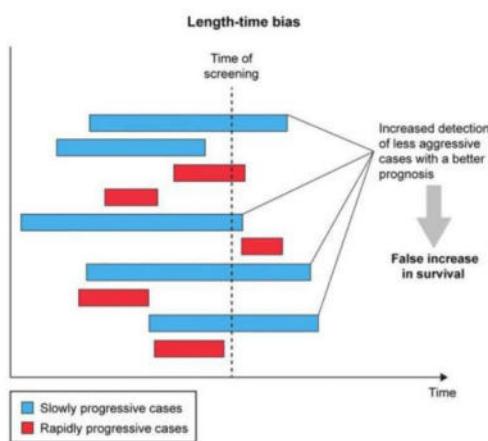
UWORLD IMAGES

22:22

Length time bias

UWORLD IMAGES

22:22



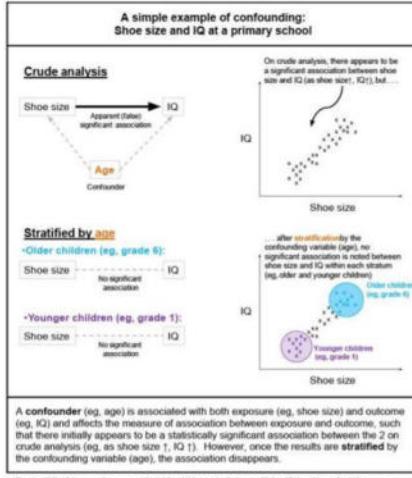
UWORLD IMAGES

22:31

Confounding

UWORLD IMAGES

22:31



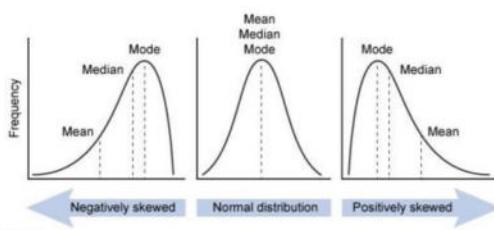
UWORLD IMAGES

22:32

Skewed distribution

UWORLD IMAGES

22:32



UWORLD IMAGES

22:53

Prevention

UWORLD IMAGES

22:53

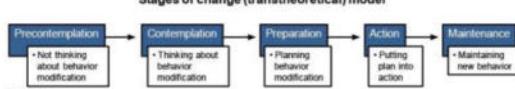
Primary, secondary & tertiary prevention		
Level	Definition	Example(s)
Primary	Preventing a disease process from becoming established	<ul style="list-style-type: none"> Health promotion (eg, regular exercise, no smoking, weight loss)
Secondary	Detecting a disease process before it causes symptoms	<ul style="list-style-type: none"> Individual case finding (eg, cervical cancer screening) Community screening (eg, blood pressure screening at state fair)
Tertiary	Treating a disease to prevent progression/complications	<ul style="list-style-type: none"> Disability limitation (eg, blood sugar and blood pressure control in diabetes) Rehabilitation (eg, physical therapy after stroke)

©UWorld

UWORLD IMAGES

22:55

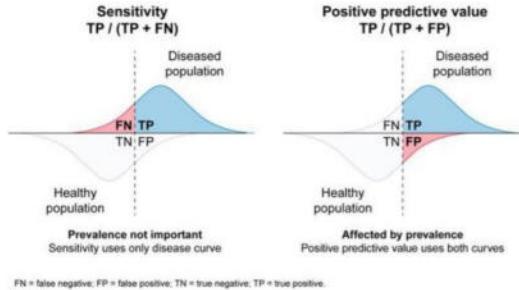
Stages of change (transtheoretical model)



UWORLD IMAGES

22:55

Stages of change model



FN = false negative; FP = false positive; TN = true negative; TP = true positive.

©UWorld

UWORLD IMAGES

23:05

Positive predictive value and prevalence

UWORLD IMAGES

23:07

	Positive condition	Negative condition	Total	Prevalence = 100/1000 = 0.10
Positive test result	95 (TP)	18 (FP)	113	$PPV = \frac{TP}{TP+FP}$
Negative test result	5 (FN)	882 (TN)	887	$NPV = \frac{TN}{TN+FN}$
Total	100	900	1000	$PLR = 0.95/(1 - 0.98) = 47.5$ $NLR = (1 - 0.95)/0.98 = 0.05$
	Positive condition	Negative condition	Total	Prevalence = 400/1000 = 0.40
Positive test result	380	12	392	$Sensitivity = 380/(380 + 20) = 0.95$ $Specificity = 588/(12 + 588) = 0.98$
Negative test result	20	588	608	$PPV = 380/(380 + 12) = 0.97$ $NPV = 588/(20 + 588) = 0.97$
Total	400	600	1000	$PLR = 0.95/(1 - 0.98) = 47.5$ $NLR = (1 - 0.95)/0.98 = 0.05$

FN = false negative; FP = false positive; NLR = negative likelihood ratio; NPV = negative predictive value;

PLR = positive likelihood ratio; PPV = positive predictive value; TN = true negative; TP = true positive.

©UWorld

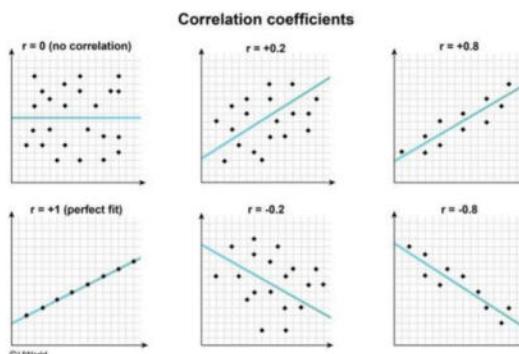
UWORLD IMAGES

23:15

Correlation coefficients

UWORLD IMAGES

23:15



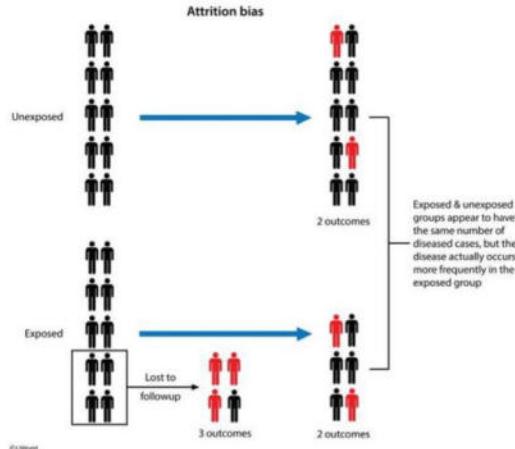
UWORLD IMAGES

23:31

Attrition bias

UWORLD IMAGES

23:31



UWORLD IMAGES

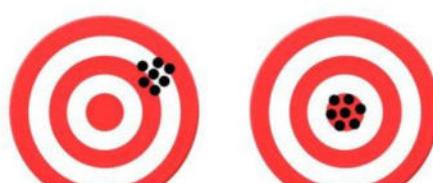
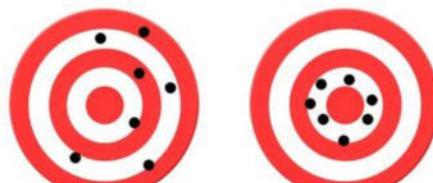
23:34

Precision and accuracy

UWORLD IMAGES

23:34

Precision & accuracy



UWORLD IMAGES

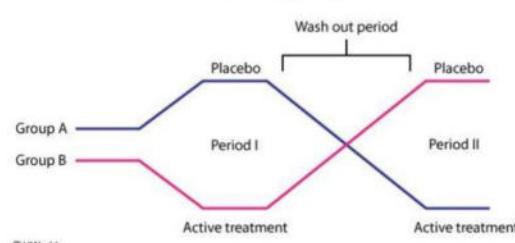
23:37

Crossover study design

UWORLD IMAGES

23:37

Crossover study design



UWORLD IMAGES

23:51

Type 1 and type 2 errors

UWORLD IMAGES

23:51

Type I (α) and type II (β) errors

		True status	
		There is a true difference (ie, H_0 is false)	There is NO true difference (ie, H_0 is true)
Study result	Difference calculated as statistically significant (ie, reject H_0)	Correctly conclude there is a difference	Type I (α) error (Falsey conclude there is a difference)
	Difference calculated as NOT statistically significant (ie, fail to reject H_0)	Type II (β) error (Falsey conclude there is NO difference)	Correctly conclude there is NO difference

H_0 = null hypothesis of no difference.

©UWorld