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VOL- I

Q WAVE

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Q WAVE

For AIPGMEE, DNB-CET, FMGE &AIIMS

Rahul Rajeev, Hariharan M, Elam Vazhuthi, Priyadarsini M, Deepa Rajmohan, Nishanth B Singh

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EDULANCHE PREVIEW

5 Pathology

1 BRCA1 is the most common gene mutated in familial breast cancer. This gene is located on which chromosome?

A. 13
B. 17
C. 20
D. 21

BRCA1 gene is located on **long arm** of **chromosome 17** (AIIMS)
BRCA2 gene is located on **long arm** of **chromosome 13**

Most common gene mutated in **sporadic** breast cancers is: **P53**
Most common gene mutated in **familial** breast cancer **is: BRCA1**
Molecular sub-types of Breast Cancer (High Yield Topic for **AIIMS**)
a. Luminal A - ER, PR positive & HER negative
b. Luminal B - ER, PR & HER positive
c. Basal - Triple negative
d. HER 2 enriched - ER, PR negative, HER positive
"Cookie cutter spaces" is the histopathological hallmark of **Cribriform** variant of **DCIS**
Most **sensitive** investigation for DCIS is **MRI** (*can detect calcified and non calcified DCIS)*
Best investigation for **screening** DCIS is **Mammography**
Lobular carcinoma of the breast is characterised by loss of **E-Cadherin**, a cell-adhesion molecule that functions as a tumor suppressor. "**Indian file arrangement**" of cells is a feature of Lobular carcinoma. Lobular carcinomas have high incidence of **bilaterality**
Most common cause of orbital metastasis in female - Breast carcinoma (**May AIIMS 2013**)

Lymphoplasmacytic infiltrates is a feature of medullary carcinoma breast. In the absence of distant metastasis, most important prognostic factor for invasive carcinoma of breast is **Axillary lymph node status.**

LCIS is NOT a **premalignant** condition like DCIS, but is considered a **risk factor** for breast cancer.
D

APC gene (*colon cancer and FAP*) - chromosome 5
WT-1 (*Wilms tumor suppressor gene*) - chromosome 11
Rb gene (*retinoblastoma and osteosarcoma*) - chromosome 13
NF-1 and **p53** – chromosome 17
NF-2 – chromosome 22

2. Multifocal tumor of vascular origin in a patient with AIDS:

A. Astrocytoma
B. Gastric Carcinoma
C. Kaposi sarcoma
D. Primary CNS lymphoma

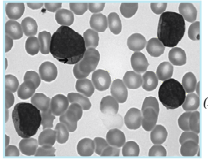
KAPOSI SARCOMA

HHV-8 is the etiological agent
It is an angioproliferative disease and **not a true neoplastic sarcoma**
Develops more commonly in **HIV infected** patients and **organ transplant patients**
It may develop at any stage of HIV infection.
Lymph node involvement **does not** signify poor prognosis
Characteristic **histologic** finding : **Promontary sign**: plump endothelial cells jutting into the lumen of the capillary
The skin lesions may show **Koebner phenomenon**
Most common internal organ affected by Kaposi's sarcoma- **Small bowel**.
There are four different epidemiological forms of Kaposi Sarcoma
a. Classic form: occur in elderly men
b. Equatorial form/African endemic form: occur in all ages,no recognised precipitating factor
c. Form associated with organ transplant and other immunocompromised states
d. Form associated with HIV-1 infection: **most common** form.

Kaposi sarcoma can develop even in the presence of a **normal CD4 count** but the **single most important determinant of response to treatment of KS is CD4 count**
D

3. A 35 year old male presented with complaints of bleeding gums.There is history of recurrent infections in the past 1 year. On examination, pallor present. Peripheral smear of the same patient is shown below.Identify the pointed structure?

A. Dohle body
B. Normoblast
C. Auer Rod
D. Heinz bodies



(Refer Color Plate No:7 for color image)

11 Medicine

1 Café au lait macules are the hallmark of:

A. Neurofibromatosis
B. Von Hippel Lindau syndrome
C. Sturge weber syndrome
D. Angiokeratoma

NEUROFIBROMATOSIS

NF Type 1 (NF1) Or Von Recklinghausen Disease

The **most common** of the neurocutaneous syndromes
Incidence: Approximately **1 in 3000** people.
Inheritance: Autosomal dominant *(approximately half of NF1 cases result from a spontaneous mutation)*
Mutation: NF1 gene on chromosome 17q11.2
The gene product, NEUROFIBROMIN, is a tumour suppressor protein, which inhibits RAS-mediated cell proliferation.

Investigation of choice for **Neurofibroma** is **MRI** whereas for **Angiofibroma**, it is **CECT.**

D

NF Type 2 (NF2)

Characterized by bilateral vestibular schwannomas, other brain or spinal cord tumours
Mutation: NF2 gene on chromosome 22
The gene product is SCHWANOMIN or MERLIN, which is also a tumour suppressor protein.

Diagnostic Criteria for Neurofibromatosis

NF Type 1 (Any two or more)
- Six or more cafe-au-lait lesions more than 5 mm in diameter before pu berty and more than 15 mm in diameter afterward
- Freckling in the axillary or inguinal areas
- Optic glioma
- Two or more neurofibromas or one plexiform neurofibroma
- A first-degree relative with NF Type 1
- Two or more Lisch nodules
- A characteristic bony lesion (sphenoid dysplasia, thinning of the cortex of long bones, with or without pseudoarthrosis)

NF Type 2
- Bilateral eighth nerve tumor
- A first degree relative with NF Type 2 and a unilateral eighth nerve tumor
- A first degree relative with NF Type 2 and any two of the following lesions: neurofibroma, meningioma, schwannoma, glioma, or juvenile posterior subscapular lenticular opacity

The most common orthopaedic manifestation of Neurofibromatosis type 1 is **scoliosis**[JIPMER 2012]
Café au lait macules are the hall mark of neurofibromatosis and are present in almost **100% of patients**
Neurofibromas are also called **dumbbell tumours**
Neurofibromatosis can cause **J shaped sella**[PGI]
The benign tumour for which radiotherapy is indicated is **Dermatofibromatosis**
The most distinctive feature of Neurofibromatosis-2 is **bilateral acoustic neuromas**
Acoustic neuromas show "**ice cream cone**" appearance on MRI

B VHL patients have very high risk of developing **renal clear cell carcinoma (*clear cell type*)**

C SWS shows **tram track calcification** on CT

D Angiokeratomas are seen in Fabry's disease.

2. SIADH is a known complication of TB meningitis.Which among the following is not true regarding SIADH?

A. Decreased plasma osmolality
B. Hypervolemia
C. Dilutionalhyponatremia
D. Both a and b

Most common group of drugs that produce SIADH are **SSRI'S**

D

SIADH (SYNDROME OF INAPPROPRIATE ADH SECRETION)

Increased secretion of vasopressin occurs despite decreased serum osmolality
Clinical euvolemia: Edema does not occur despite increased body water. *(**SIADH** is the **most common** cause of euvolemichyponatremia. Euvolemichyponatremia is **also found** in moderate to severe **hypothyroidism**.)*
Dilutionalhyponatremia*(sodium less than 135 mmol/litre)*
Decreased plasma osmolality with inappropriately **increased urine osmolality** *(previous Qn)*
Urine sodium greater than 20 meq/litre

5 Orthopedics

1 The most common type of spinal TB is:

A. Central
B. Paradiscal
C. Anterior periosteal
D. Posterior

Types of spinal TB	Features
Parsdiscal *(Epiphyseal)*	Commonest type Contiguous areas of two adjacent vertebrae along with the intervening disc is involved
Central	Body of a single vertebra is affected More commonly causes a **wedging collapse** of the vertebra
Anterior periosteal	It occurs only in adults. **Scalloping effect/ Aneurysmal phenomenon/saw tooth appearance** is seen in X-ray
Posterior/Appendicial	Least common type Usually affects atlantoaxial and atlantoccipital joints

TB arthritis of hip and knee can cause fibrous ankylosis whereas TB spine causes bony ankylosis

D

MC site of skeletal TB is: spine
Tuberculosis of spine starts in vertebral body
MC site of spinal TB is dorsal spine >> dorsolumbar spine[AIIMS]
MC clinical feature of spinal TB is: **kyphosis**
Earliest feature of spinal tuberculosis is reduction of intervertebral disc space.
Alderman's gait is seen in: TB affecting **dorsolumbar spine**
Commonest variety of tuberculosis of shoulder is dry and is known as **caries sicca**
TB dactylitis *(of digits)* is also known as **spina ventosa**

1. B. Paradiscal

MC site affected in TB hip is roof of acetabulum. Radiological features of TB hip are-loss of joint space, mortar pestle appearance, wandering acetabulum[AIIMS], protrusio acetabuli, dislocated hip
The **triad of Phemister** refers to three features seen classically with Tuberculous arthritis. They consist of:

Juxtarticularosteopaenia /osteoporosis
Peripheral osseous erosions
Gradual narrowing of joint space

Tuberculosis of knee produces the classic **triple deformity** *(rheumatoid arthritis also causes it)*

Flexion
Posterior subluxation of tibia
External rotation of tibia

Best imaging method for Avascular necrosis is MRI [AIIMS]

D

2. Gallows traction is used for:

A. # Shaft of humerus
B. # Head of femur
C. # Shaft of femur
D. Intertrochanteric #

Gallow's traction is used for shaft of femur fractures in children upto 2 years of age.

Shaft of Femur: Rx

a. From birth to 2 yrs: **Gallows traction** *(or Bryant's traction)* for 3-6 wks.
b. From 2 to 16 yrs: Conservative - traction initially, later hip spica for immobilization. Internal fixation is sometimes preferred in older children.
c. Adults: Surgery

TRACTION	Pulling force to treat muscle or skeletal disorders **Types** **a. Skin traction** Traction applied to skin. Max weight: **4-5 kg** Using adhesive tape & bandage, buck's apparatus Eg. Gallow's/Bryant's/Russel traction. **b. Skeletal traction** An invasive procedure. Pins, screws, wires placed into bones & weight applied directly to bone. Upto **20 kg** weight is permitted

SPLINTS AND TRACTIONS

Dennis Brown Splint	CTEV
Von Rosen Splint	Developmental Dysplasia of Hip
Thomas splint, Bohler Braun splint	Fracture femur
Cock up splint	Radial nerve palsy
Knuckle bender splint	Ulnar nerve palsy
Aeroplane splint	Brachial plexus injury

17 Anaesthesiology

1 **Methaemoglobinemia is a condition characterised by increased amounts of Methemoglobin (a form of hemoglobin that contains ferric (Fe^{3+}) iron instead of ferrous iron and has a decreased ability to bind oxygen) The firstline antidote for this condition is I/V Methylene Blue. Which of the following local anaesthetics is known to cause methaemoglobinemia?**

A. Lignocaine
B. Dibucaine
C. Bupivacaine
D. Prilocaine

PRILOCAINE

Best local anaesthetic for **Bier's block**
Can cause **methaemoglobinemia.**

LOCAL ANAESTHETICS

Mechanism Of Action

Blockade of **voltage gated sodium channelsfrom inside** of cell membrane.
Resting nerve is more resistant to blockade than stimulated nerve.
Addition of vasoconstrictors like **adrenaline** prolongs the duration of action and decrease the systemic toxicity.
Sodium bicarbonate raises the pH of local anaesthetics,thereby **increasing the unionised** form that can penetrate the axonal membrane.Thus,it **increases speed of onset** of anaesthesia,**prolongs the duration** of action and **intensity** of block.

The **first drug**to be used as a local anaesthetic is **Cocaine**

D

Classification Of Local Anaesthetics

Amide linked	Ester linked
Lignocaine	Cocaine
Bupivacaine	Procaine
Prilocaine	Chlorprocaine
Dibucaine	Benzocaine
Ropivacaine	Tetracaine

1. D. Prilocaine

18 Radiodiagnosis

1 **The right heart border in a chest X Ray is formed normally by the Right atrium. Double atrial heart shadow is a radiological feature of:**

A. Mitral stenosis
B. Mitral regurgitation
C. Aortic Stenosis
D. Aortic regurgitation

RADIOLOGICAL FEATURES OF MITRAL STENOSIS

Mitral Stenosis is the most common heart disease associated with pregnancy

D

A) Due To Left Atrial Enlargement
Elevation of left main bronchus
Straightening of left heart border
Double atrial shadow (enlarged left atrium and normal right atrium)
Posterior displacement of oesophagus on barium swallow

B) Due To Pulmonary Arterial Hypertension
Cardiomegaly
Enlargement of main pulmonary artery and central pulmonary vessels
Peripheral pruning (tapering of peripheral vessels)

C) Due To Pulmonary Venous Hypertension
Dilatation of upper lobe pulmonary veins (upper lobe diversion/ cephalisation of pulmonary veins)
Kerley B lines (due to interstitial edema)
Alveolar oedema
Pulmonary hemosiderosis

Note:Earliest evidence of left atrial enlargement is **straightening of left heart border**/bulging of atrial appendage. (AI 2008)
This is followed in sequence by posterior displacement of oesophagus and elevation of left main bronchus.

First radiological feature of **Pulmonary Venous Hypertension** is dilatation of upper lobe pulmonary veins (Upper lobe diversion/ Inverted Moustache sign)

Ventricular function of heart is best assessed by **MRI > Echo**
Myocardial viability is best assessed by **PET>Thallium scan**(JIPMER 2012)
Most **sensitive** investigation for detecting **air embolism** is Transoesophageal echocardiography.

1. A. Mitral stenosis

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