

**Micro
eNS**
(Past years Q)

All Lectures



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Micro CNS (Bacterial Meningitis)

Past Y Exam Q Mansoura

- 1- *What is the most common cause of neonatal meningitis?*
- a) Staph. aureus
 - b) Group B streptococci
 - c) Mycobacterium tuberculosis
 - d) Streptococcus pneumoniae
 - e) Streptococcus pyogenes
- 2- *What is the most proper sample for diagnosis of meningococcal meningitis?*
- a) Blood
 - b) Nasopharyngeal swab
 - c) CSF
 - d) Throat swab
 - e) Sputum
- 3- *Which of these is a character of CSF in acute bacterial meningitis?*
- a) CSF is clear
 - b) Contains polymorphonuclear cells
 - c) Glucose value is high
 - d) Protein level is low
 - e) Contains lymphocytes
- 4- *Gram stain from a spinal fluid revealed many PMNs and gram-positive bacilli, what is the suggestive causative organism?*
- a) Haemophilus influenzae
 - b) Listeria monocytogenes
 - c) Cryptococcus neoformans
 - d) Neisseria meningitidis
 - e) Streptococcus pneumoniae

1	2	3	4
B	C	B	B

5-Which is true regarding cultural characters of *Listeria monocytogenes*?

- a) Cannot grow on ordinary media
- b) Produces no hemolysis on blood agar
- c) Selective medium is Lowenstein Jensen medium
- d) Can grow in the cold even at temperature as low as 1°C
- e) Can grow only on tissue culture

6-which is the most important virulence factor of *Neisseria meningitidis*?

- a) Exotoxin
- b) Endotoxin
- c) Capsule
- d) Pilli
- e) Proteolytic enzymes

7- Which is true about meningococcal meningitis vaccine?

- a) Quadrivalent vaccine containing A, C, Y & W-135 polysaccharide
- b) Quadrivalent vaccine containing A, C, Y & B polysaccharide
- c) Routine immunization of children is recommended
- d) It is highly effective in young children
- e) It is living attenuated vaccine

5	6	7
D	C	A

Exercise MCQ

1. Meningitis is the inflammation of which part of the body?
 - a) Lungs
 - b) Spleen
 - c) Stomach
 - d) Brain and spinal cord
2. Which of the following is a common cause of bacterial meningitis in neonates?
 - a) Neisseria meningitidis
 - b) Haemophilus influenzae
 - c) Listeria monocytogenes
 - d) Mycobacterium tuberculosis
3. What is the most important virulence factor of Neisseria meningitidis?
 - a) Pili
 - b) IgA protease
 - c) Endotoxin
 - d) Polysaccharide capsule
4. Which of the following is a selective medium for Neisseria meningitidis?
 - a) MacConkey agar
 - b) Chocolate agar
 - c) Thayer-Martin agar
 - d) Blood agar

1	2	3	4
D	C	D	C

5. The most common age group affected by *Neisseria meningitidis* is:
 - a) Neonates
 - b) Adults over 60
 - c) 6 months to 2 years
 - d) Pregnant women
6. What is the primary mode of transmission for *Neisseria meningitidis*?
 - a) Contaminated food
 - b) Blood transfusion
 - c) Droplet infection
 - d) Insect bite
7. What laboratory finding is characteristic of acute bacterial meningitis in CSF analysis?
 - a) Normal glucose levels
 - b) Presence of polymorphonuclear cells
 - c) High glucose, low protein
 - d) Presence of viruses
8. Which of the following bacteria cause chronic meningitis?
 - a) *Haemophilus influenzae*
 - b) *Neisseria meningitidis*
 - c) *Mycobacterium tuberculosis*
 - d) *Streptococcus pneumoniae*

5	6	7	8
C	C	B	C

9. Which bacterial species can be transmitted from mother to baby during birth?

- a) *Streptococcus pneumoniae*
- b) Group B *Streptococcus*
- c) *Haemophilus influenzae*
- d) *Neisseria meningitidis*

10. What is the treatment of choice for meningococcal meningitis?

- a) Ceftriaxone
- b) Ciprofloxacin
- c) Tetracycline
- d) Amoxicillin

11. Which bacterial pathogen can survive and grow at low temperatures (as low as 1°C)?

- a) *Neisseria meningitidis*
- b) *Streptococcus pneumoniae*
- c) *Listeria monocytogenes*
- d) *Mycobacterium tuberculosis*

12. Which of the following is a Gram-negative diplococcus?

- a) *Streptococcus pneumoniae*
- b) *Listeria monocytogenes*
- c) *Neisseria meningitidis*
- d) *Haemophilus influenzae*

9	10	11	12
B	A	C	C

13. What is the diagnostic feature of *Listeria monocytogenes* in CSF?
- Gram-negative bacilli
 - Gram-positive rods in short chains
 - Gram-positive cocci in clusters
 - Acid-fast bacilli
14. Which serogroup of *Neisseria meningitidis* is associated with large epidemics?
- Serogroup B
 - Serogroup C
 - Serogroup A
 - Serogroup Y
15. Which test is used to detect the presence of *Neisseria meningitidis*?
- Oxidase test
 - Coagulase test
 - Catalase test
 - Urease test
16. Which antibiotics are recommended for prophylaxis after exposure to meningococcal meningitis?
- Penicillin
 - Rifampicin or Ciprofloxacin
 - Erythromycin
 - Vancomycin

13	14	15	16
B	C	A	B

17. What is a key feature of *Listeria monocytogenes* pathogenesis?
- a) Formation of spores
 - b) Capsule production
 - c) Intracellular survival
 - d) Production of endotoxin
18. Which of the following is NOT a symptom of bacterial meningitis?
- a) Fever
 - b) Stiff neck
 - c) Nausea and vomiting
 - d) Hypertension
19. What is the preferred diagnostic sample for bacterial meningitis?
- a) Nasal swab
 - b) Blood sample
 - c) Cerebrospinal fluid (CSF)
 - d) Saliva
20. Which preventive measure is recommended for bacterial meningitis?
- a) MMR vaccine
 - b) Meningococcal conjugate vaccine
 - c) Hepatitis B vaccine
 - d) DTaP vaccine

17	18	19	20
C	D	C	B

Written

1- Enumerate Virulence factors of N. meningitis

- 1- Polysaccharide capsule
- 2- Endotoxin (Lipooligosaccharides)
- 3- Outer membrane Proteins
- 4- IgA-Protease
- 5- pili (fimbria)

2- Give Short Account

A- Capsular polysaccharide Vaccine of N. meningitis.

1. most important virulence factor
2. Anti-phagocytic
3. Different capsular antigens. A, B, C, W135, Y.

B-Lab Diagnosis of case of N. meningitis (Sample - Identification of colonies)

Sample:

- a) 3-10ml CSF by lumbar puncture
- b) Blood, Skin
- c) CSF: Turbid, high protein, low glucose

Identification Of colonies:

- a) film: Stained by Gram
- b) Biochemical reaction: oxidase positive
- c) Ferment Maltose & Glucose with acid only.
- d) Agglutination: specific meningococcal antisera.

Micro CNS (Viral Meningitis)

Past Y Exam Q Mansoura

<p>1- The patient with CMV infection can be treated with which antiviral drug?</p> <ul style="list-style-type: none">a) Acyclovirb) Ganciclovirc) Famciclovird) Valaciclovire) Zanamivir	B
<p>2- A 4-month child develops a viral infection with fever and vesicular lesions in the anterior portion of the mouth, as well as around the mouth. This infection occurred 2 weeks after her mother had a cold sore. The lesion lasted for about 3 weeks. Which of the following will be the most likely consequence of this infection in the child?</p> <ul style="list-style-type: none">a) Acute infection with complete recoveryb) Encephalitisc) Latency with periodic recurrenced) Keratitise) Meningitis	D
<p>3- A 17-years old girl presents with fever, stiff neck, malaise, inguinal lymphadenopathy, vaginal discharge and vesicular lesions on her external genitalia. A direct fluorescent Antibody stain of the genital lesions showed nuclear fluorescence. She admits of being sexually active but has never had symptoms like these before. Which is the recommended treatment for this infection?</p> <ul style="list-style-type: none">a) Acyclovirb) Gancyclovirc) Zanamavird) Lamivudinee) Ampicillin	A

<p>4- A 29-year old pregnant nurse present with a mononucleosis like syndrome. She states that she had infection mononucleosis as a teenager and is concerned that she may have contracted CMV from her 18-months-old son who attends day care. Her concern for her unborn child. What neurological sequelae are most likely if the fetus is borne with symptoms of in-utero infection with CMV?</p> <ul style="list-style-type: none"> a) Aneurysms of blood vessels in the brain b) Intracranial hemorrhages c) Mental retardation and deafness d) Recurrent episodes of meningitis e) Seizures 	<p>C</p>
<p>5- One month after receiving a heart transplant, a 43-year old man develops fever, malaise, abdominal pain, weight loss and bloody diarrhea. Endoscopy reveals erythematous hemorrhagic colonic mucosa with multiple erosions and ulcerations. Histopathology of colonic biopsied mucosa reveals several large cells with prominent intranuclear inclusion bodies typical of the viral aetiologic agent. With which antiviral should this man be treated?</p> <ul style="list-style-type: none"> a) Acyclovir b) Azidothymidine c) Ganciclovir d) Ribavirin e) voriconazole 	<p>C</p>
<p>6- A patient with CMV infection can be treated with which antiviral drug</p> <ul style="list-style-type: none"> a) Acyclovir b) Ganciclovir c) Famciclovir d) Valaciclovir e) Zanamivir 	<p>B</p>

<p>7-Rabies virus belongs to:</p> <ul style="list-style-type: none"> a) Orthomyxoviruses b) Paramyxoviruses c) Rhabdoviruses d) Togaviruses e) Arenaviruses 	<p>C</p>
<p>8- Which of the following viruses is the cause of infectious mononucleosis like syndrome?</p> <ul style="list-style-type: none"> a) Cytomegalovirus b) Epstein barr virus c) Herpes simplex type 1 d) Huma herpes virus 6 e) Varicella zoster virus 	<p>A</p>
<p>9- A 55-year-old male develops a rash (papules vesicles and crusty scabs) along the 16 dermatomes on the right side of his body. his history is significant for immunosuppressive drug therapy for transplantation surgery. At presentation he was feverish. which virus is the most likely etiologic agent of his conditions?</p> <ul style="list-style-type: none"> a) Herpes simplex b) Measles virus c) Mumps virus d) Varicella zoster virus 	<p>D</p>
<p>10- The virus which remains latent in B lymphocytes is:</p> <ul style="list-style-type: none"> a) CMV b) EBV c) VZV d) Measles virus e) Mumps virus 	<p>B</p>

<p>11-which of the following statement regarding the serological diagnosis of infectious mononucleosis is correct? زیاده احتیاطی</p> <p>a) A heterophile antibody is formed that react with the membrane protein of EBV</p> <p>b) A Heterophile antibody is formed that agglutinate sheep or horses RBCs</p> <p>c) A heterophile antigen occurs that cross react with atypical lymphocytes</p> <p>d) A heterophile antigen occurs following infection with EPV and CMV</p> <p>e) Paul Bunnell test is negative</p>	<p>B</p>
<p>12- The presence of neuronal Negri bodies is characteristic of CNS infection by?</p> <p>a) Eastern equine encephalitis virus</p> <p>b) Rabies virus</p> <p>c) Herpes simplex virus</p> <p>d) Poliomyelitis virus</p> <p>e) West Nile fever virus</p>	<p>B</p>
<p>13- Human diploid cell vaccine of rabies (HDC) is characterized by? زیاده</p> <p>a) Live attenuated vaccine</p> <p>b) Given in 21 injections</p> <p>c) The vaccine is produced by growing the virus embryonated eggs</p> <p>d) The vaccine is safe and given and six injections</p> <p>e) post vaccination encephalitis</p>	<p>D</p>

Written

1- Give short account

A- Primary infection & Latency of HSV-1

- Primary infection: Acute gingivostomatitis, herpes labialis, Keratoconjunctivitis, Herpetic whitlow, Encephalitis.
- Latency: After primary infection, Virus travels Via nerves to reach Trigeminal Ganglion

B- Primary infection & Latency of HSV-2

- Primary infection: Genital herpes, neonatal infection, Aseptic meningitis.
- Latency: virus travels to Sacral Ganglion..

C- Herptic whitlow

- Pustular lesion of Skin of Finger or hand of medical personnel

D-Neonatal varicella

- Early pregnancy: limbs scarring, damage to lens, retina, & brain, microphthalmia. - Fetal infection in more common near time of birth.
- the severity of disease depends on production of anti-VZVIgG from the mother

E- Clinical findings of Varicella or chicken pox

- Fever
- Itching rash (non grouped vesicles)..

F- Shingles or Zoster

- Painful vesicles in sensory nerves of head & trunk (belt of roses from hell).
- The pain last for weeks and post zoster neuralgia may exist.
- In immunocompromised pneumonia can occur.

G- Primary infection of CMV (Congenital - Healthy individuals - Immunodeficient patients)

- Congenital: is the most common intrauterine viral infection.
- Healthy individuals: Asymptomatic, intermittent Shedding in Saliva & urine.
- Immunodeficient: hepatitis & pneumonia.
- In AIDS patients: diarrhea & retinitis

H- Cytomegalic inclusion disease

- Congenital: is the most common intrauterine viral infection.
- healthy individuals: Asymptomatic, intermittent Shedding in Saliva & urine
- Immunodeficient: hepatitis & pneumonia.
- In AIDS patients: diarrhea & retinitis

I- Infectious mononucleosis (IM)

- Fever headache malaise
- Pharyngitis lymphadenopathy
- Increase levels of liver enzymes in Blood.
- lasts several weeks, complete recovery may take much longer

J- Malignancy of Epstein-Barr virus (EBV)

- Burkitts lymphoma (jow)
- Naso pharyngeal carcinoma
- oral hairy leukoplakia (tongue)

K- C/P of Mumps.

- Causes febrile illness & inflammation of Salivary glands
- swelling maybe asynchronous & lasts

L- Complication of Mumps

- Aseptic meningitis
- Encephalitis
- Orchitis
- Oophoritis
- Thyroditis
- Pancreatitis.

M- Complication of Measles

- Bronchopneumonia & otitis media
- Encephalitis
- subacute sclerosing panencephalitis

N- Koplik's spots

- Raised red spots with white centers in the mouth.

O - MMR vaccine

- given by subcutaneous injection, at 12-15 months age
- Single dose gives 90% protection against measles & mumps; & 95-99% against rubella

2- Enumerate causative organism of the following

A-Most common intrauterine viral infection >> **cytomegalo v. (CMV)**

B- Infectious mononucleosis >> **cytomegalo v (CMV)**

C-Burkitt's lymphoma / Oral hairy leukoplakia >> **Epstein Barr virus. (EBV)**

D-Shingles or Zoster >> **Varicella zoster virus**

E-Koplik's spots >> **measles**

Micro CNS (Viral Encephalitis)

Past Y Exam Q Mansoura

<p>1- Eastern equine encephalitis virus is the causative agent of:</p> <ul style="list-style-type: none">a) Pneumoniab) Primary encephalitisc) Secondary encephalitisd) Syphilise) Dermatitis	<p>B</p>
<p>2- Poliomyelitis virus is the causative agent of?</p> <ul style="list-style-type: none">a) Pneumoniab) Primary encephalitisc) Secondary encephalitisd) Syphilise) Dermatitis	<p>C</p>
<p>3- The presence of neuronal Negri bodies is characteristic of CNS infection by?</p> <ul style="list-style-type: none">a) Eastern equine encephalitis virusb) Rabies virusc) Herpes simplex virusd) Poliomyelitis viruse) West Nile fever virus	<p>B</p>
<p>4- Human diploid cell vaccine of rabies (HDC) is characterized by?</p> <ul style="list-style-type: none">a) Live attenuated vaccineb) Given in 21 injectionsc) The vaccine is produced by growing the virus embryonated eggsd) The vaccine is safe and given and six injectionse) post vaccination encephalitis	<p>D</p>

11- Rabies virus belongs to:

- a) Orthomyxoviruses
- b) Paramyxoviruses
- c) Rhabdoviruses
- d) Togaviruses
- e) Arenaviruses

C

Written

1- Enumerate organisms cause Primary Encephalitis:

- 1- Eastern equine encephalitis v.
- 2- Western equine encephalitis V.
- 3- Rabies v
- 4- Lacrosse encephalitis

2- Enumerate organism cause Secondary Encephalitis:

- 1- Measels
- 2- Rubella
- 3- Varicella

3- Enumerate Human vaccines of Rabies

- 1-..Nerve Tissue vaccine
- 2-Duck embryo vaccine
- 3-Human diploid fibroblast vaccine

4- Give Short Account

A-HDC vaccine

- Culture the virus on human fibroblasts then inactivated.
- Safe effective but expensive.
- 6 injection

B- Pathogenesis of Rabies

- Transmission >> bite of infected rabid
- Normal hosts: bats, cats, dogs, foxes.
- I.P: varies from 3 8 weeks to 1 year
- Enter blood directly through site of bite, primary Replication occurs locally with no symptoms.
- Infection of peripheral nerves then travels to CNS to produce: photophobia hydrophobic & fatal encephalitis.

6-Enumerate causative organism of the following

A-Detection of Negri bodies in the brain or the spinal cord Rhabdo viruses. >>

Rhabdoviruses

B- Rabies >> **Rhabdoviruses**

C-Subacute sclerosing panencephalitis >> **measles**

Micro CNS (Fungal Encephalitis)

Exercise Q

<p>1- Which of the following is a leading cause of fungal meningitis and encephalitis?</p> <p>a) <i>Candida albicans</i> b) <i>Aspergillus fumigatus</i> c) <i>Cryptococcus neoformans</i> d) <i>Mucormycetes</i></p>	<p>C</p>
<p>2- <i>Candida</i> species are part of the normal flora in all of the following EXCEPT:</p> <p>a) Oral cavity b) Gastrointestinal tract c) Skin d) Lung</p>	<p>D</p>
<p>3- Which media is most appropriate for fungal culture?</p> <p>a) MacConkey agar b) Nutrient agar c) Sabouraud dextrose agar d) CLED agar</p>	<p>C</p>
<p>4- A common predisposing factor for fungal encephalitis is:</p> <p>a) Hypertension b) Immunosuppression c) High cholesterol d) Viral infection</p>	<p>B</p>
<p>5- Which of the following is used in unstained preparation for fungal diagnosis?</p> <p>a) Gram stain b) KOH c) Ziehl-Neelsen stain d) Giemsa stain</p>	<p>B</p>

<p>6- What characteristic is commonly observed in <i>Candida albicans</i> on SDA?</p> <p>a) Black colonies b) Hairy colonies c) Creamy white colonies d) Fluorescent green colonies</p>	<p>C</p>
<p>7- <i>Candida albicans</i> can be identified in serum by:</p> <p>a) Pseudohyphae b) Germ tube formation c) Septate hyphae d) Sporangia</p>	<p>B</p>
<p>8- Aspergillosis is primarily transmitted through:</p> <p>a) Direct skin contact b) Ingestion of spores c) Inhalation of spores d) Blood transfusion</p>	<p>C</p>
<p>9- What is the key microscopic feature of <i>Aspergillus</i>?</p> <p>a) Non-septate hyphae b) Encapsulated yeast c) Germ tubes d) Septate hyphae with <i>Aspergillus</i> head</p>	<p>D</p>
<p>10-Which form of aspergillosis resembles a fungal ball in a TB cavity?</p> <p>a) Aspergilloma b) Allergic aspergillosis c) Pneumonia d) Cutaneous aspergillosis</p>	<p>A</p>

<p>11- Which antifungal is nephrotoxic due to damage to renal tubular cells?</p> <p>a) Fluconazole b) Amphotericin B c) Caspofungin d) Itraconazole</p>	<p>B</p>
<p>12- Mucormycosis is caused by fungi that exhibit:</p> <p>a) Narrow septate hyphae b) Dimorphic fungi c) Encapsulated yeast d) Broad non-septate hyphae</p>	<p>D</p>
<p>13- Which virulence factor enables Mucorales fungi to cause angioinvasion?</p> <p>a) Iron acquisition b) Hemolysin production c) Capsule formation d) Urease activity</p>	<p>A</p>
<p>14- What color is typical of mucormycosis colonies on SDA?</p> <p>a) Green b) Black/Gray c) Red d) Blue</p>	<p>B</p>
<p>15- Which condition most favors mucormycosis?</p> <p>a) Hyperthyroidism b) Hypertension c) Acidosis in diabetes d) Dehydration</p>	<p>C</p>

<p>16- Which of the following is NOT effective against Mucorales?</p> <p>a) Echinocandins b) Amphotericin B c) Posaconazole d) Liposomal amphotericin B</p>	<p>A</p>
<p>17- What is the primary method for diagnosing fungal elements in tissue?</p> <p>a) Hematology b) Coagulation profile c) Histopathology d) ELISA</p>	<p>C</p>
<p>18- What is the most appropriate specimen for diagnosing mucormycosis?</p> <p>a) Urine b) Blood c) CSF d) Nasal discharge or tissue biopsy</p>	<p>D</p>
<p>19- Germ tube test for Candida albicans involves incubation in serum at:</p> <p>a) 25°C for 2 hours b) 30°C for 3 hours c) 37°C for 4 hours d) 40°C for 5 hours</p>	<p>C</p>
<p>20- Which of the following fungi is commonly found in decaying organic matter?</p> <p>a) Mucorales b) Histoplasma c) Cryptococcus d) Blastomyces</p>	<p>A</p>

<p>21- Which infection causes black necrotic lesions in the nasal mucosa?</p> <p>a) Candidiasis b) Aspergillosis c) Rhinocerebral mucormycosis d) Histoplasmosis</p>	<p>C</p>
<p>22- Which light can be used in the diagnosis of skin fungal infections?</p> <p>a) Blue light b) Infrared light c) Laser light d) Wood's light</p>	<p>D</p>
<p>23- Fungi that cause encephalitis in immunocompromised patients are:</p> <p>a) Primary mycoses b) Opportunistic mycoses c) Saprophytic mycoses d) Dermatophytes</p>	<p>B</p>
<p>24- In mucormycosis, spores are formed at the ends of:</p> <p>a) Pseudohyphae b) Sporangiohores c) Germ tubes d) Conidiophores</p>	<p>B</p>
<p>25- Which clinical feature is commonly associated with thoracic mucormycosis?</p> <p>a) Neck stiffness b) Retinal hemorrhage c) Skin ulcer d) Ischemic necrosis of lung parenchyma</p>	<p>D</p>

Written

1- Enumerate 4 major causes of fungal encephalitis.

- *Cryptococcus neoformans*
- *Candida* species (e.g., *Candida albicans*)
- *Aspergillus* species (e.g., *Aspergillus fumigatus*)
- *Mucormycetes* (e.g., *Rhizopus*, *Mucor*)

2- List 3 direct microscopic techniques used in fungal diagnosis.

- **KOH mount** (10-30%) - for unstained direct observation
- **Lactophenol cotton blue stain** - for stained fungal structures
- **Wood's light examination** - for fluorescence of skin/hair fungal infections

3- Name 5 virulence factors of Mucorales fungi. **TRIP**

- **T**hermotolerance - ability to thrive at various temperatures
- **R**apid growth - fast colonization and invasion
- **T**issue penetration - via rhizoids and sporangiophores
- **I**ron acquisition - strong affinity for host iron
- **P**roduction of proteolytic enzymes - degrade and invade host tissue

4- Give 4 predisposing factors for opportunistic fungal infections.

- Immunosuppression (e.g., from steroids, chemotherapy)
- Extremes of age (neonates or elderly)
- Diabetes mellitus
- Prolonged use of antibiotics

5- Enumerate 4 systemic antifungal drugs used in treatment.

- Amphotericin B (especially liposomal form)
- Fluconazole
- Itraconazole
- Voriconazole