

Hashemite University, 4th year, Neurosurgery Exam

Thursday, 10.05.2012

1. L4.L5 disk causes:???

	L3-4	L4-5	L5-S1
Root Involved	L4	L5	S1
Incidence	<10%	45%	45%
Pain	Femoral pattern	Sciatic pattern	Sciatic pattern
Sensory	Medial leg	Dorsal foot to hallux Lateral leg	Lateral foot
Motor	Tibialis anterior (dorsiflexion)	Extensor hallucis longus (hallux extension)	Gastrocnemius, soleus (plantar flexion)
Reflex	Knee jerk	Medial hamstrings	Ankle jerk

	Conus Medullaris Syndrome	Cauda Equina Syndrome
Onset	Sudden, bilateral	Gradual, unilateral
Spontaneous Pain	Rare, if present usually bilateral, symmetric in perineum or thighs	Severe, radicular type: in perineum, thighs, legs, back, or bladder
Sensory Deficit	Saddle; bilateral and symmetric; sensory dissociation	Saddle; no sensory dissociation; may be unilateral and asymmetric
Motor Deficit	Symmetric; paresis less marked; fasciculations may be present	Asymmetric; paresis more marked; atrophy may be present; fasciculations rare
Reflexes	Only ankle jerk absent (preserved knee jerk)	Knee and ankle jerk may be absent
Autonomic Symptoms (bladder dysfunction, impotence, etc.)	Urinary retention and atonic anal sphincter prominent early; impotence frequent	Sphincter dysfunction presents late; impotence less frequent

2. Shunt infections treatment :

- a. 2 questions ma 7ada 3aref el jawab

Table 3. Shunt Complications

Complication	Etiology	Clinical Features	Investigations
Obstruction (most common)	<ul style="list-style-type: none"> Obstruction by choroid plexus Buildup of proteinaceous accretions, blood, cells (inflammatory or tumour) Infection Disconnection or damage 	<ul style="list-style-type: none"> Acute hydrocephalus Increased ICP 	<ul style="list-style-type: none"> "Shunt series" (plain x-rays of entire shunt that only rule-out disconnection, break, tip migration) CT Radionuclide "shuntogram"
Infection (3-6%)	<ul style="list-style-type: none"> <i>S. epidermidis</i> <i>S. aureus</i> <i>P. acnes</i> Gram-negative bacilli 	<ul style="list-style-type: none"> Fever, N/V, anorexia, irritability Meningitis Peritonitis Signs and symptoms of shunt obstruction Shunt nephritis (VA shunt) 	<ul style="list-style-type: none"> CBC Blood culture Tap shunt for C&S (LP usually NOT recommended)
Overshunting (10% over 6.5 years)	<ul style="list-style-type: none"> Slit ventricle syndrome Collapse of ventricles leading to occlusion of shunt ports by ependymal lining Secondary craniostylosis (children) 	<ul style="list-style-type: none"> Chronic or recurring headaches often relieved when lying down Slit-like ventricles on imaging 	<ul style="list-style-type: none"> CT/MRI
	<ul style="list-style-type: none"> Subdural hematoma Collapsing brain tears bridging veins (especially common in NPH patients) 	<ul style="list-style-type: none"> Asymptomatic Headaches, vomiting, somnolence 	<ul style="list-style-type: none"> CT
	<ul style="list-style-type: none"> Apposition and overlapping of the cranial sutures in an infant following decompression of hydrocephalus 	<ul style="list-style-type: none"> Abnormal head shape 	<ul style="list-style-type: none"> Clinical CT
Seizures (5.5% risk in 1st year, 1.1% after 3rd year)			<ul style="list-style-type: none"> EEG
Inguinal Hernia (17% incidence with VP shunt inserted in infancy) ± skin breakdown over hardware	<ul style="list-style-type: none"> Increased intraperitoneal pressure/fluid results in hernia becoming apparent 	<ul style="list-style-type: none"> Inguinal swelling, discomfort 	<ul style="list-style-type: none"> U/S

3. All of the following is indicated for hydroceph:
 - a. vp shunt, 3rd ventricle fenestration, intermittent drainage,,,, el jawab-> all of the above
4. A patient was examined ... had gcs 15\15 then he was unconscious. Diagnosis is?
 - a. seizure
5. Which of the following is caused by mass....
 - a. Sensory, motor, hydroceph..... all of the above
6. Superior cervical sympathectomy causes all except:
 - a. exophthalmos

7. **Which of The following are indications for disk surgery:**
 a. cauda equine compression, progressive deficit, severe pain affecting life..... All of the above
8. **Which of the following is false about Myelomeningocele:**
 a. Surgical repair reverses the neurological deficit
9. **Foot drop + eversion..... which nerve is injured..... ???**

Peroneal Mononeuropathy Clinical Presentation: Physical

- If the lesion is severe, a complete foot drop that spares plantar flexion and foot inversion is noted.
- The gait will be high-stepping with "foot slapping."
- In milder cases, weakness of foot eversion and dorsiflexion may be noted only by asking the patient to walk on his or her heels.

Source: <http://emedicine.medscape.com/article/1141734-clinical#showall>

Correction: The question is wrong: It should be: Which nerve is involved in a patient with foot drop and foot inversion.

10. Which combination of nerve and reflex is false.... II and III corneal reflex

Corneal reflex:

Afferent: Ophthalmic < trigeminal nerve

Efferent: Facial nerve because it innervates the orbicularis oculi muscle

11. What is an absolute indication for surgery in skull fracture.....????

12. Which of the following is epileptogenic :

... fracture with parenchymal disruption... head trauma + loss of consciousness answer : all of the above

13. A child was found to have a tuft of hair in his lower back which is false....

Assure family that it's normal and nothing is wrong

14. All the following causes seizure except...

MS

For more than 20 minutes I have been searching for an answer. The summary of my search based on the reference below are:

- Epilepsy is more frequent in MS patients than in the general population . This is "epidemiology" proven. About 3-6 times. Percentage is 5% according to Dr. Muneer Dohaeta. But:
 - "The cumulative incidence of epilepsy by 10 years after diagnosis of MS was 1.9%." <http://onlinelibrary.wiley.com/doi/10.1111/j.1528-1157.1999.tb00772.x/abstract>
 - "1.70%": <http://content.karger.com/ProdukteDB/produkte.asp?Aktion=ShowAbstractBuch&ArtikelNr=117350&ProduktNr=234313>

- When the causes of epilepsy are mentioned, MS is not mentioned as one of them.

See the references below so that you can blame them if our doctors had something else to say:

“In a series of 2,353 multiple sclerosis (MS) patients, 40 subjects presented seizures, with an overall prevalence of 1.70%. Our study on a large MS population confirms that MS is associated to a risk for epilepsy higher than that of the general population.” Source:

<http://content.karger.com/ProdukteDB/produkte.asp?Aktion=ShowAbstractBuch&ArtikelNr=117350&ProduktNr=234313>

“Epilepsy is three to six times more frequent in MS than in the general population.”

<http://www.springerlink.com/content/5q58136m44m20v71/>

“*Conclusions:* Our data are consistent with those reported in literature suggesting that the risk of developing epilepsy is threefold higher among MS patients than in the general population.”

Epilepsy and Multiple Sclerosis in Sicily: A Population-based Study, 2003,

<http://onlineibrary.wiley.com/doi/10.1046/j.1528-1157.2003.09203.x/full>

“Knowledge concerning the relationship between multiple sclerosis and epilepsy is reviewed. Epidemiological studies have established that epileptic seizures are more frequent in multiple sclerosis than predicted by chance.”

Epileptic and non-epileptic seizures in multiple sclerosis, 2011,

<http://www.springerlink.com/content/ekdvw3tpgr4yfylu/>

Does MS cause seizures?

MS is not mentioned as a cause in the following websites:

- <http://www.nhs.uk/conditions/Epilepsy/Pages/Causes.aspx>
- <http://emedicine.medscape.com/article/1184846-overview>

Causes of epilepsy from Harrison’s, 17th ed, 2008: They do not include multiple sclerosis

Table 363-4 Causes of Seizures	
Neonates (<1 month)	Perinatal hypoxia and ischemia Intracranial hemorrhage and trauma

<p>Infants and children (>1 mo and <12 years)</p>	<p>Acute CNS infection</p> <p>Metabolic disturbances (hypoglycemia, hypocalcemia, hypomagnesemia, pyridoxine deficiency)</p> <p>Drug withdrawal</p> <p>Developmental disorders</p> <p>Genetic disorders</p> <p>Febrile seizures</p> <p>Genetic disorders (metabolic, degenerative, primary epilepsy syndromes)</p> <p>CNS infection</p> <p>Developmental disorders</p>
<p>Adolescents (12–18 years)</p>	<p>Trauma</p> <p>Idiopathic</p> <p>Trauma</p> <p>Genetic disorders</p> <p>Infection</p> <p>Brain tumor</p> <p>Illicit drug use</p>
<p>Young adults (18–35 years)</p>	<p>Idiopathic</p> <p>Trauma</p> <p>Alcohol withdrawal</p> <p>Illicit drug use</p> <p>Brain tumor</p>
<p>Older adults (>35 years)</p>	<p>Idiopathic</p> <p>Cerebrovascular disease</p>

Brain tumor
Alcohol withdrawal
Metabolic disorders (uremia, hepatic failure, electrolyte abnormalities, hypoglycemia)
Alzheimer's disease and other degenerative CNS diseases
Idiopathic

Table 21.33	Epilepsy: aetiological factors
	Genetic predisposition
	Developmental, e.g. hamartomas, neuronal migration abnormalities
	Hippocampal sclerosis
	Brain trauma and surgery
	Pyrexia
	Intracranial mass lesions, e.g. tumour, neurocysticercosis
	Vascular, e.g. cerebral infarction, AVM
	Drugs and drug withdrawal
	Encephalitis and inflammatory conditions, e.g. herpes simplex, MS
	Metabolic abnormalities, e.g. porphyria, hypocalcaemia
	Neural degenerative disorders, e.g. Alzheimer's
	Provoked seizures, e.g. photosensitivity, sleep deprivation
	Drugs, e.g. ciclosporin, lidocaine, quinolones, SSRIs, interferons, cocaine, lithium, withdrawal of amfetamines, barbiturates
	Alcohol withdrawal

15. Suprasellar tumour causes all except...

- a. motor deficit

16. Anterior fossa skull fracture causes all except

- a. Battle sign

17. Which of the following ABX crosses the BBB without meningitis

- a. 1- penicillin 2- cefotaxime 3- chloramfenicol 4- A+C

MS... سؤال أرنح من سؤال الـ

There is not a single internet page talking specifically about this topic; maybe I used the wrong keywords. But here are two studies indicating that B-lactams pass the blood brain barrier poorly without inflammation and that chloramphenicol is extremely lipophilic and can pass the BBB without inflammation.

Basically, all the drugs mentioned above can pass the BBB. However, only chloramphenicol can pass it efficiently without inflammation. So, if this is what the doctor wants, "Which drug passes efficiently

without inflammation". Then the answer is only chloramphenicol. This is the summary of the following references:

The CSF half-lives of lipophilic agents, such as quinolones, are similar to those in serum and peak concentrations in CSF are achieved relatively quickly. In contrast, the pharmacokinetics of hydrophilic agents (beta-lactams and vancomycin) in CSF often differ from those in serum. In particular, the half-lives of these agents in CSF tend to be extended, and the time to achieve peak concentrations in CSF is delayed. Hydrophilic antibiotics, such as beta-lactams, penetrate poorly through the BBB, but CSF penetration is significantly increased in the presence of inflammation.

In contrast, lipophilic antibiotics, such as quinolones, enter the CSF more efficiently and their penetration is not inflammation dependent. The pharmacodynamic properties of antibiotics in CSF are generally similar to those in other body sites; beta-lactam agents and vancomycin are time-dependent, whereas the quinolones and aminoglycosides are concentration-dependent. However, a notable difference from infections in other sites is that quinolones have a short PAE in CSF and need to continually exceed the MBC for maximal effectiveness. Thus, in CSF, quinolones demonstrate features of both concentration-dependency and time-dependency, evidence that the AUC/MBC is an important predictor of effectiveness. With the exception of quinolones, many antibiotics appear to have prolonged sub-MIC effects and longer half-lives in CSF than in serum, suggesting that dosing intervals longer than those used traditionally would be effective in meningitis. However, this requires clinical verification.

Antibiotic pharmacodynamics in cerebrospinal fluid., <http://www.ncbi.nlm.nih.gov/pubmed/9827256>

Chloramphenicol levels in cerebrospinal fluid in meningitis.

[van Niekerk CH](#), [Steyn DL](#), [Davis WG](#), [Heese Hde V](#).

Abstract

Chloramphenicol was found to cross the blood-brain barrier into the cerebrospinal fluid of children with pyogenic meningitis effectively both at days 2 and 10 of therapy. It is recommended as the drug of choice in the treatment of children with Haemophilus influenzae meningitis.

<http://www.ncbi.nlm.nih.gov/pubmed/7404208>

Why penicillin don't pass blood brain barrier?

but passes in meningitis

Question answered by a "top contributor" in yahoo answers;

<http://answers.yahoo.com/question/index?qid=20070921110441AAL96bE>

Beta-lactam antibiotics are among the most commonly prescribed drugs, grouped together based upon a shared structural feature, the beta-lactam ring. Beta-lactam antibiotics include:

- Penicillins
- Cephalosporins
- Cephamycins
- Carbapenems
- Monobactams
- Beta-lactamase inhibitors

18. Child comes with vomiting and nausea of 3 months duration and has cerebellar signs and otitis media 2 weeks ago .. what is the DDX , what's the next step.....

- a. abscess, cerebellar tumour..... CT scan

19. A man comes after trauma complaining of numbness in C7 distribution following trauma what can be done to see the cause ...

- a. neck xray... ct scan c1-t1 all of the above