

## Examples of closed book questions related to the papers EBN 2023

### Cerebrovascular diseases (1)

Ferro JM, Bousser MG, Canhão P, Coutinho JM, Crassard I, Dentali F, di Minno M, Maino A, Martinelli I, Masuhr F, de Sousa DA, Stam J; European Stroke Organization. European Stroke Organization guideline for the diagnosis and treatment of cerebral venous thrombosis - Endorsed by the European Academy of Neurology. *Eur Stroke J.* 2017 Sep;2(3):195-221. doi: 10.1177/2396987317719364. Epub 2017 Jul 21. PMID: 31008314; PMCID: PMC6454824.

A 57 year old patient is treated for cerebral venous thrombosis (CVT). Which of the following investigations is most appropriate to prevent recurrent venous thrombosis in patients with cryptogenic CVT?

A: Cancer screening in all patients with cryptogenic CVT.

B: Cancer screening only in cryptogenic CVT in patients aged >50 years.

C: Lumbar puncture to rule out chronic meningitis.

D: Thrombophilia screening in all patients with cryptogenic CVT.

**E: Thrombophilia screening only in cases of personal or family history of venous thrombosis.**

Turc G, Bhogal P, Fischer U, Khatri P, Lobotesis K, Mazighi M, Schellinger PD, Toni D, de Vries J, White P, Fiehler J. European Stroke Organisation (ESO) - European Society for Minimally Invasive Neurological Therapy (ESMINT) Guidelines on Mechanical Thrombectomy in Acute Ischaemic Stroke Endorsed by Stroke Alliance for Europe (SAFE). *Eur Stroke J.* 2019 Mar;4(1):6-12. doi: 10.1177/2396987319832140. Epub 2019 Feb 26. PMID: 31165090; PMCID: PMC6533858.

How long is the regular time window for mechanical thrombectomy in large vessel occlusion following the definition used in the European guidelines (2019)?

A: 4 hours after onset of the stroke.

**B: 6 hours after onset of the stroke.**

C: 2 hours after intravenous thrombolysis.

D: 4 hours after intravenous thrombolysis.

E: 6 hours after intravenous thrombolysis.

What is the recommendation regarding use of intravenous thrombolysis (IVT) and/or mechanical thrombectomy (MT) for treatment of large vessel occlusion acute ischaemic stroke in adults:

A: If MT is a practical treatment option, there is no indication for IVT.

B: IVT should be given if there are no contraindications followed by MT.

**C: IF MT is practically available IVT and thereafter IVT should not delay MT.**

D: There is no common opinion about this.

## Dementia (2)

Armstrong MJ. Advances in dementia with Lewy bodies. *Ther Adv Neurol Disord*. 2021 Nov 23;14:17562864211057666. doi: 10.1177/17562864211057666. PMID: 34840608; PMCID: PMC8613883.

In the management of neuropsychiatric complications relating to Dementia with Lewy Bodies, which of the following strategies is most appropriate?

A: Early institution of therapy with atypical neuroleptic agents to prevent psychosis

B: Early institution of cholinesterase inhibitors to prevent psychosis

**C: Institution of cholinesterase inhibitors only after neuropsychiatric symptoms become distressing.**

D: Start memantine and cholinesterase inhibitor therapy at diagnosis

E: Low-dose levodopa in high frequency

## Epilepsy (3)

Abouelleil M, Deshpande N, Ali R. Emerging Trends in Neuromodulation for Treatment of Drug-Resistant Epilepsy. *Front Pain Res (Lausanne)*. 2022 Mar 21;3:839463. doi: 10.3389/fpain.2022.839463. PMID: 35386582; PMCID: PMC8977768.

Which of the following is the most frequent complication with cortical stimulation of seizure onset focus?

A: Kindling of the seizure focus area resulting in an increase of epileptic discharges.

B: Depression and other psychiatric disorders.

C: Amnesic syndrome.

**D: Local Infection.**

## Headache and facial pain (4)

Sacco S, Lampl C, Amin FM, Braschinsky M, Deligianni C, Uludüz D, Versijpt J, Ducros A, Gil-Gouveia R, Katsarava Z, Martelletti P, Ornello R, Raffaelli B, Boucherie DM, Pozo-Rosich P, Sanchez-Del-Rio M, Sinclair A, Maassen van den Brink A, Reuter U. European Headache Federation (EHF) consensus on the definition of effective treatment of a migraine attack and of triptan failure. *J Headache Pain*. 2022 Oct 12;23(1):133. doi: 10.1186/s10194-022-01502-z. PMID: 36224519; PMCID: PMC9555163.

Which of the following is a typical feature of 'new daily persistent headache'.

**A: No familial occurrence.**

B: Mainly adults are affected.

C: Mainly females are affected.

D: More common in northern countries.

E: Previous history of psychiatric symptoms.

What is the prognosis in patients with 'new daily persistent headache'?

A: Half of the patients develop a classical migraine syndrome.

B: Most patients are pain-free without treatment within 24 months.

**C: Although the clinical picture is known for decades the prognosis is not really known.**

D: Most patients get into a partial remission with alternating painfree and headache days.

### Immune mediated diseases (5)

Solari A, Oliver D; EAN Guideline Task Force. Palliative care in multiple sclerosis: European guideline. *Mult Scler*. 2020 Aug;26(9):1009-1011. doi: 10.1177/1352458520926467. Epub 2020 Jun 9. PMID: 32513039.

Which of the following drugs should be used by preference to reduce pain in patients with severe MS?

**A: Lamotrigine**

B: Levetiracetam

C: Primidone

D: Topiramate

E: Valproate

Which of the following drugs is most appropriate for the treatment of nocturia in MS?

A: Amitriptyline

B: Cabergoline

C: Cimetidine

**D: Desmopressin**

E: Nabiximols

### Infections (6)

Zhou J, Zhang H, Tang K, Liu R, Li J. An Updated Review of Recent Advances in Neurosyphilis. *Front Med (Lausanne)*. 2022 Sep 20;9:800383. doi: 10.3389/fmed.2022.800383. PMID: 36203756; PMCID: PMC9530046.

What is 'atypical neurosyphilis'? Neurosyphilis.....

A: with neuroimaging progression in spite clinically effective treatment.

B: with serologic abnormalities but no clinical symptoms.

**C: manifesting between the early and late phases.**

D: not reacting to Penicillin G.

E: with unusual symptoms.

### Movement disorders (7)

Grütz K, Klein C. Dystonia updates: definition, nomenclature, clinical classification, and etiology. *J Neural Transm (Vienna)*. 2021 Apr;128(4):395-404. doi: 10.1007/s00702-021-02314-2. Epub 2021 Feb 19. PMID: 33604773; PMCID: PMC8099848.

Which of the following neuropsychiatric drugs are most likely to cause dystonia?

A: Anticholinesterases.

B: Anticholinergics.

**C: Anticonvulsants.**

D: Benzodiazepines.

E: Serotonin re-uptake inhibitors.

### Movement disorders (7) and neuropsychiatry (14)

Weintraub D, Aarsland D, Chaudhuri KR, Dobkin RD, Leentjens AF, Rodriguez-Violante M, Schrag A. The neuropsychiatry of Parkinson's disease: advances and challenges. *Lancet Neurol.* 2022 Jan;21(1):89-102. doi: 10.1016/S1474-4422(21)00330-6. PMID: 34942142; PMCID: PMC8800169.

Which of the following neuropsychiatric signs in Parkinson's disease is encountered more in male patients than in female patients?

A: Anxiety.

**B: Apathy.**

C: Depression.

D: Psychosis.

### Neuro-emergency and intensive care (8)

Kondziella D, Bender A, Diserens K, van Erp W, Estraneo A, Formisano R, Laureys S, Naccache L, Ozturk S, Rohaut B, Sitt JD, Stender J, Tiainen M, Rossetti AO, Gosseries O, Chatelle C; EAN Panel on Coma, Disorders of Consciousness. European Academy of Neurology guideline on the diagnosis of coma and other disorders of consciousness. *Eur J Neurol.* 2020 May;27(5):741-756. doi: 10.1111/ene.14151. Epub 2020 Feb 23. PMID: 32090418.

*3 weeks after an acute brain injury a patient appears awake but does not seem to follow commands or notice the presence of the clinician.*

What is the most appropriate clinical tool in addition to a neurological exam to characterize his state of consciousness?

A: the Glasgow Coma Scale (GCS)

**B: the Coma Recovery Scale – Revised (CRS-R)**

C: the Richmond Agitation-Sedation scale (RASS)

D: the Full Outline of Unresponsiveness (FOUR) score

E: the Confusion Assessment Method in the ICU (CAM-ICU)

### Neuro-trauma (9)

Stocker RA. Intensive Care in Traumatic Brain Injury Including Multi-Modal Monitoring and Neuroprotection. *Med Sci (Basel).* 2019 Feb 26;7(3):37. doi: 10.3390/medsci7030037. PMID: 30813644; PMCID: PMC6473302.

Several types of oedema are part of the pathophysiological process of traumatic brain injury. In which sequence does the oedema occur?

A: Cytotoxic edema – ionic edema – vasogenic edema

B: Cytotoxic edema – vasogenic edema – ionic edema

**C: Vasogenic edema – cytotoxic edema – ionic edema**

D: Vasogenic edema – ionic edema – cytotoxic edema

### Neurological complications of internal disease (10)

Mansueto G, Lanza G, Fisicaro F, Alaouieh D, Hong E, Girolami S, Montella M, Feola A, Di Napoli M. Central and Peripheral Nervous System Complications of Vasculitis Syndromes From Pathology to Bedside: Part 1-Central Nervous System. *Curr Neurol Neurosci Rep.* 2022 Jan;22(1):47-69. doi: 10.1007/s11910-022-01172-z. Epub 2022 Feb 9. PMID: 35138587; PMCID: PMC9056593.

Before starting therapy in primary vasculitis (angiitis) of the central nervous system (PANC) the diagnosis should be as certain as possible. Which of the following is the minimal requirement for starting with immunosuppression? Vasculitis specific abnormalities .....

A: in CSF.

**B: in a brain Biopsy.**

C: with PET-scanning.

D: with CT-Angiography

E: with diffusion tensor MRI

### Neuromuscular diseases (11)

Van den Bergh PYK, van Doorn PA, Hadden RDM, Avau B, Vankrunkelsven P, Allen JA, Attarian S, Blomkwist-Markens PH, Cornblath DR, Eftimov F, Goedee HS, Harbo T, Kuwabara S, Lewis RA, Lunn MP, Nobile-Orazio E, Querol L, Rajabally YA, Sommer C, Topaloglu HA. European Academy of Neurology/Peripheral Nerve Society guideline on diagnosis and treatment of chronic inflammatory demyelinating polyradiculoneuropathy: Report of a joint Task Force-Second revision. *J Peripher Nerv Syst.* 2021 Sep;26(3):242-268. doi: 10.1111/jns.12455. Epub 2021 Jul 30. Erratum in: *J Peripher Nerv Syst.* 2022 Mar;27(1):94. Erratum in: *Eur J Neurol.* 2022 Apr;29(4):1288. PMID: 34085743.

Which of the following corticosteroid regimens is preferred in CIDP in the European task force report (2021)?

A: Daily oral dexamethasone.

B: Daily oral predniso(lo)ne.

C: Pulse dose therapy with dexamethasone.

D: Pulse dose therapy with methylpredniso(lo)ne.

**E: The best corticosteroid regimen is not known.**

### Neuro-oncology (12), neuromuscular diseases (11)

Desforges AD, Hebert CM, Spence AL, Reid B, Dhaibar HA, Cruz-Topete D, Cornett EM, Kaye AD, Urits I, Viswanath O. Treatment and diagnosis of chemotherapy-induced peripheral neuropathy: An update. *Biomed Pharmacother.* 2022 Mar;147:112671. doi: 10.1016/j.biopha.2022.112671. Epub 2022 Jan 29. PMID: 35104697.

Which of the following clinical signs is most valuable for assessing chemotherapy induced polyneuropathy?

A: Muscle atrophy.

B: Muscle weakness.

C: Loss of muscle stretch reflexes.

**D: Loss of superficial sensation.**

E: Loss of deep sensation.

### Neuro-otology and Neuro-ophthalmology (13)

Koukoulithras I, Drousia G, Kolokotsios S, Plexousakis M, Stamouli A, Roussos C, Xanthi E. A Holistic Approach to a Dizzy Patient: A Practical Update. *Cureus*. 2022 Aug 4;14(8):e27681. doi: 10.7759/cureus.27681. PMID: 36106247; PMCID: PMC9447938.

Which of the following factors is most likely the underlying cause of chronic dizziness without other neurological signs or symptoms?

**A: Use of vestibular suppressants.**

B: Persistent Canalolithiasis.

C: Vertebral artery stenosis.

D: A Chiari malformation.

E: A slow virus infection.

### Neuropsychiatry (14) and dementia (2)

Nagata T, Shinagawa S, Inamura K, Shigeta M. Pathogenesis and Personalized Interventions for Pharmacological Treatment-Resistant Neuropsychiatric Symptoms in Alzheimer's Disease. *J Pers Med*. 2022 Aug 24;12(9):1365. doi: 10.3390/jpm12091365. PMID: 36143150; PMCID: PMC9501542.

Neuropsychiatric symptoms in Alzheimer's Disease may need pharmacological treatment but drug therapy may be ineffective for several reasons. One of these may be biological factors.

Which of the following is the major biological factor of importance in this context?

A: Increased metabolism of the drug under consideration.

B: Problems with taking drugs because of swallowing problems.

C: Inefficacy of drugs because of insensitive cerebral neuroreceptors.

**D: Varying tolerability for drugs because of a change in therapeutical window.**

E: Inaccessibility to the brain due to decreased permeability of the blood-brain barrier.

### Pain (16) and Headache (4)

Fernandes L, Randall M MD FRCP, Idrovo L DMed FRCP. Peripheral nerve blocks for headache disorders. *Pract Neurol*. 2020 Oct 23;practneurol-2020-002612. doi: 10.1136/practneurol-2020-002612. Epub ahead of print. PMID: 33097609.

Which of the following local side-effects is the major problem with local corticosteroid injections to treat headache?

A: Fragility of small blood vessels.

B: Allergic reactions.

C: Skin discoloration.

D: Fat accumulation.

**E: Hair loss.**

### Disturbances of CSF (17)

Passos-Neto CEB, Lopes CCB, Teixeira MS, Studart Neto A, Spera RR. Normal pressure hydrocephalus: an update. *Arq Neuropsiquiatr*. 2022 May;80(5 Suppl 1):42-52. doi: 10.1590/0004-282X-ANP-2022-S118. PMID: 35976308.

Which of the following MRI findings should raise the suspicion of another diagnosis than idiopathic normal pressure hydrocephalus?

A: Flattening (crowding) of the cortical sulci in high convexity.

B: High signal intensity over the lateral ventricle margins.

**C: Prominent frontal cortical atrophy.**

D: Widening of the Sylvian fissure.

E: Third ventricle dilatation.

### Sleep (18) and neurovascular diseases (1)

Bassetti CLA, Randerath W, Vignatelli L, Ferini-Strambi L, Brill AK, Bonsignore MR, Grote L, Jennum P, Leys D, Minnerup J, Nobili L, Tonia T, Morgan R, Kerry J, Riha R, McNicholas WT, Papavasileiou V. EAN/ERS/ESO/ESRS statement on the impact of sleep disorders on risk and outcome of stroke. *Eur Respir J*. 2020 Apr 21;55(4):1901104. doi: 10.1183/13993003.01104-2019. PMID: 32317355.

Which of the following diseases is a risk factor for stroke in patients with obstructive sleep apnea syndrome following the EAN guideline on sleep disorders (2020)?

A: Alzheimer's disease.

**B. Diabetes mellitus.**

C: Frontal epilepsy.

D: Hyperthyroidism.

E: Parkinson's disease.

Bassetti CLA, Kallweit U, Vignatelli L, Plazzi G, Lecendreux M, Baldin E, Dolenc-Groselj L, Jennum P, Khatami R, Manconi M, Mayer G, Partinen M, Pollmächer T, Reading P, Santamaria J, Sonka K, Dauvilliers Y, Lammers GJ. European guideline and expert statements on the management of narcolepsy in adults and children. *Eur J Neurol*. 2021 Sep;28(9):2815-2830. doi: 10.1111/ene.14888. Epub 2021 Jun 25. PMID: 34173695.

Which of the following non-pharmacological recommendations for patients with narcolepsy is supported by the European Guideline on Narcolepsy (2021)?

A: Retiring to the bedroom early in the evening.

B: Taking a nap whenever there are spontaneous sleep attacks.

C: Recommending to sleep late into the morning.

**D: Planning regular daytime naps.**

### Spinal cord disorders (19)

Oliver DJ, Borasio GD, Caraceni A, de Visser M, Grisold W, Lorenzi S, Veronese S, Voltz R. A consensus review on the development of palliative care for patients with chronic and progressive neurological disease. *Eur J Neurol*. 2016 Jan;23(1):30-8. doi: 10.1111/ene.12889. Epub 2015 Oct 1. PMID: 26423203.

Which of the following statements is in accordance with current evidence based guidelines (Oliver et al. 2016)? Advance care planning for a person with progressive chronic neurological disease.....

A: should only be discussed with family members if the patient is not able to make decisions.

**B: should be considered early in the disease progression, so that the person's views are known.**

C: allows the family to express their views as to the care their family member will receive.

D: should only be discussed if the patients asks for it.

### Autonomic nervous system (20)

Fanciulli A, Jordan J, Biaggioni I, Calandra-Buonaura G, Cheshire WP, Cortelli P, Eschlboeck S, Grassi G, Hilz MJ, Kaufmann H, Lahrmann H, Mancina G, Mayer G, Norcliffe-Kaufmann L, Pavy-Le Traon A, Raj SR, Robertson D, Rocha I, Struhal W, Thijs R, Tsioufis KP, van Dijk JG, Wenning GK. Consensus statement on the definition of neurogenic supine hypertension in cardiovascular autonomic failure by the American Autonomic Society (AAS) and the European Federation of Autonomic Societies (EFAS) : Endorsed by the European Academy of Neurology (EAN) and the European Society of Hypertension (ESH). *Clin Auton Res*. 2018 Aug;28(4):355-362. doi: 10.1007/s10286-018-0529-8. Epub 2018 May 15. PMID: 29766366; PMCID: PMC6097730.

What are the general diagnostic criteria for orthostatic hypotension?

A:  $\geq 20$  mmHg drop systolic or 10mmHg diastolic peripheral blood pressure upon standing

**B:  $\geq 20$  mmHg drop systolic or 10mmHg diastolic peripheral blood pressure within 3 minutes of standing**

C:  $\geq 20$  mmHg drop systolic or diastolic peripheral blood pressure after 5 minutes of standing

D:  $\geq 30$  mmHg drop systolic or 15mmHg diastolic peripheral blood pressure upon standing



## Examples of open book questions

What kind of identification inability does prosopagnosia reflect?

A: Facial expression.

**B: Familiar faces.**

C: Melody in language.

D: Non-musical sounds.

E: Pitch of a melody.

Which of the following symptoms is found with increased frequency in patients with neuropathic pain as compared with patients with nociceptive pain ?

A: Deep aching pain.

B: Lancing pain.

C: Pain evoked by local pressure.

D: Pain on exercise.

**E: Sensation of pins and needles.**

*A bedbound and thin 81 year old female presented with footdrop (weakened dorsiflexion and eversion of the foot). During the examination she also had sensory deficit in the anterolateral aspect of the lower leg and the dorsum of the foot including the web space between the 1st and 2nd metatarsals. Hip abduction by the gluteus medius was unaffected.*

Which nerve is most likely to be affected?

A: The femoral nerve.

**B: The peroneal nerve.**

C: The posterior tibial nerve.

D: The saphenous nerve.

E: The sciatic nerve.

Which of the following is a direct MRI-sign of a sagittal sinus thrombosis?

A: Haemorrhagic and non haemorrhagic infarcts.

B: Generalized brain oedema.

**C: An empty delta sign.**

D: Intense contrast enhancement of the tentorium cerebelli.

E: Intense contrast enhancement of the falx cerebri.

Which of the following is the commonest sign following an infarction of the lateral medulla oblongata?

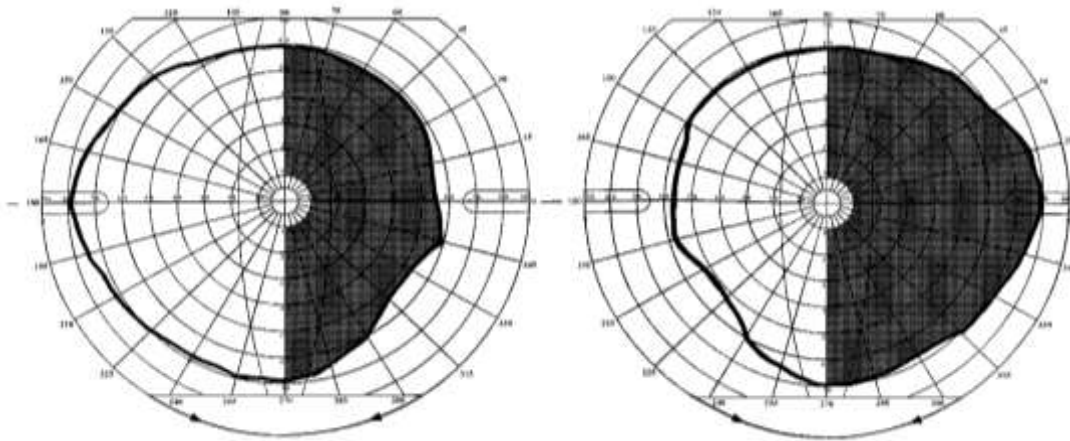
A: Chewing weakness.

**B: Hiccup.**

C: Internuclear ophthalmoplegia.

D: Unilateral loss of deep sensation.

E: Vertical gaze paralysis.



Which is the most likely occluded artery in a patient showing this visual defect?

- A: Carotid artery.
- B: Choroid artery.
- C: Medial cerebral artery.
- D: Posterior cerebral artery.**
- E: Thalamid artery.

*A 27 year old female complains of intermittent binocular diplopia for over one year. There is some asymmetric drooping of both eyelids. Double vision is apparent on awakening and subsides after about half an hour. In the late afternoon it may reappear and driving a car in the dark is not possible anymore. There are no further complaints. Her mother has experienced similar problems for a couple of years. She was diagnosed with a thyroid disorder.*

*On examination there is slight skew deviation with looking upward, after 10 seconds of sustained looking to the right, the left eye drifts to the midline whilst the right eye shows some horizontal jerky laterally directed movements. There is ptosis on the left; with passive elevation, the right eyelid starts drooping. There is no pupillary involvement. Repetitive nerve stimulation (3/sec, orbicularis oculi and abductor digiti V muscle) normal, anti AChR-antibodies negative. Needle EMG of the facial muscles, adductor pollicis and quadriceps muscle is normal.*

*Which diagnosis most likely explains the clinical features of this patient ?*

- A : Lambert Eaton myasthenic syndrome
- B : Mitochondrial myopathy
- C : Multiple sclerosis
- D : Myasthenia gravis**
- E : Thyroid myopathy

*A 51-year-old male, with a history of herpetic shingles in dermatomes T7-10 three years ago complains about pain in the back side of his right leg. He mentioned that there has been some red discoloration of the skin on his right lower leg, but definitely no shingles.*

*On physical examination, he demonstrated normal tone and full strength in all muscle groups bilaterally; reflexes were normal apart from the knee-reflex being somewhat decreased on the right; the adductor reflexes were symmetric. MRI of the lumbar spine showed degenerative disc disease at all lumbar levels, with slight bilateral foraminal stenosis at L3 and L4, but no herniated disc. Results of an electromyogram were normal. His cerebrospinal fluid showed a predominantly lymphocytic pleocytosis (110 cells/L), a raised protein level (570mg/L) and intrathecal Ig-synthesis.*

Which diagnosis most likely explains the clinical features of this patient ?

**A : Neuroborreliosis.**

B : Neurosarcoidosis.

C : Inflammatory plexopathy.

D : Postherpetic neuralgia.

E : Wartenberg syndrome.

*A 21-year-old female lost consciousness in a supermarket as she was paying for her shopping. She had hit the cash counter with her head. Her eyes were closed, there were some brief mild clonic jerks in her limbs. There was a pulse rate of 45/min with small pupils. She regained consciousness on the floor within seconds. Before the episode she reported feeling light-headed and dizzy for several seconds. After the episode she promptly felt well although suffering from some headache. She had already experienced numerous similar episodes since adolescence. Her mother is suffering from migraine.*

Which diagnosis most likely explains the clinical features of this patient ?

A : Basilar migraine.

B : Cataplexia.

C : Focal epilepsy.

D : Reflex epilepsy.

**E : Vasovagal syncope.**

*An 18-year-old female complained of double and blurred vision when looking to the right. Clinical examination revealed a dissociated nystagmus when looking to the right. The saccades to the right were dysconjugate with impaired adduction of the left eye.*

Select the most likely eye movement disorder in this patient.

**A : Internuclear ophthalmoplegia.**

B : Ocular bobbing.

C : Optokinetic nystagmus.

D : Rebound nystagmus.

E : See-saw nystagmus.

*A 35-year-old male was involved in a minor car accident when returning home after a tennis match, and attended hospital because of not being aware of objects on his left side. There was no head injury but nevertheless he felt a throbbing right occipital headache, with no other symptoms.*

*On clinical examination, two hours after the accident, there was a left hemianopia. Eye movements and pupillary function were normal. Blood pressure was 160/95 mmHg.*

*No abnormalities were found on a cranial CT-scan. He reported previous attacks of severe unilateral pulsatile headache with nausea and photophobia between the ages of 15 and 35 years. The frequency of headache was about once in 6 months, with a duration of up to 24 hours.*

Which diagnosis applies best to this case?

A : Internal carotid artery stenosis.

B : Migrainous infarction.

C : Reversible vasoconstriction syndrome.

D : Posterior reversible encephalopathy syndrome.

**E : Vertebral artery dissection.**

*A 60-year-old female patient is on treatment with methotrexate for rheumatoid arthritis. She develops headache, fever and vomiting over a couple of days. Thereafter she developed a right-sided facial paresis, left-sided ptosis with anisocoria due to a light insensitive wide pupil on the left with the left eye deviated downward and out. In the ambulance she is drowsy with neck-stiffness. Lumbar puncture revealed increased intrathecal pressure with milky CSF with polymorphonuclear pleocytosis (>6000/cc), low sugar and increased protein.*

Which of the following microbial agents is most likely to be responsible for this clinical presentation?

A: Haemophilus Influenzae.

**B: Listeria monocytogenes.**

C: Mycobacterium tuberculosis.

D: Neisseria meningitides.

E: Streptococcus pneumoniae.

In which of the following patients, valproate is the most appropriate to be a first choice drug?

A: In an 18 year old male with focal onset seizures.

**B: In an 18 year old male with seizures not easily classified.**

C: In an 18 year old female with generalized tonic clonic epilepsy.

D: In a 3 year old child with a mitochondrial disease and generalized epilepsy.

E: In a 3 year old child with focal febrile convulsions.

Which of the following statements relating to athetosis is most correct ?

A: Athetosis may be suppressed by voluntary motor action of other parts of the body.

B: Athetosis is confined to limb movements.

C: Athetosis can effectively be treated with dopamine antagonists.

D: Athetosis may be described as rapid jerky arrhythmic movements.

**E: Athetosis may reflect loss of proprioception when involving only fingers and toes.**

*A 35-year old female reports double vision over a couple of months. There is no problem with reading but looking far away induces diplopia. There is no ptosis. She mentions transient blurred vision in one eye three years ago. She was diagnosed with a-AChR antibody positive myasthenia gravis 15 years ago; there was no major improvement after thymectomy but her condition currently is reasonable, mainly with limb weakness and without need for immunosuppressive drugs. Previously she had fluctuating diplopia with vertical and skew components. Now there is a pure horizontal diplopia. On neurological examination there is an overt restriction of the left eye moving to the left and also some restriction of adduction of the left eye. The right eye immediately shows some jerky movements on looking to the right. There is no pupillary abnormality and no ptosis.*

Which diagnosis most likely explains the clinical features of this patient?

A: Mitochondrial myopathy.

**B: Multiple sclerosis.**

C: Myasthenia gravis.

D: Thyroid ocular myopathy.

**Clue : overt signs of MS ; pure horizontal diplopia is uncommon in MG.**

*A forty-two-year-old refugee from Somalia has lived in Germany for 5 years. She complains of pain over the lateral side of her right upper arm. The exact beginning was not clear but there was about two days between onset and maximal pain. There were some red indurated skin lesions over the right upper arm for a couple of days. Afterwards she developed a constant burning pain with paraesthesia in the affected region, that persisted for approximately five weeks and then gradually improved. Approximately 9 months later, she experienced a constant burning, partially sharp and stabbing-like pain in the same area. Upon questioning she stated that she lived near a wood and that she may have had numerous tick bites but none in the last year. Apart from arthritis and a lumbar disc herniation 20 years ago, there is no relevant medical history.*

Which diagnosis most likely explains the clinical features of this patient?

A: HIV-neuropathy.

B: Leprosis.

C: Neuroborreliosis.

**D: Postherpetic neuralgia.**

E: Small fibre neuropathy.

*A 63-year-old forester has a 2 week history of low back pain with radiation into the buttocks, especially on the left side. Furthermore there was radiation to the anterior aspect of his left upper leg. Pain was most severe at night. He has also been aware of some weakness of his left upper leg and knee which becomes apparent on climbing and even more on descending stairs. Over the last 3 days he has developed weakness of the right upper leg. He has a 10 year history of hypertension and diabetes. 3 years ago, he was operated for a prostate carcinoma. On examination there was muscle wasting of the anterior compartment of his left upper leg. There was marked weakness of left hip adductor and quadriceps muscles. On the right there was normal strength. The ankle reflexes were both depressed, the left knee reflex was absent and the right knee reflex was depressed. There was diminished sensation to pain and vibration in the feet. EMG shows neurogenic abnormalities in quadriceps, adductor and anterior tibial muscles on the left, with evidence of an axonal polyneuropathy. There were no abnormalities on CSF examination and a lumbar MRI was normal.*

Which diagnosis most likely explains the clinical features of this patient?

A: Inflammatory plexopathy.

B: Leptomeningeal metastases.

C: Lumbar disk protrusion.

D: Neuroborreliosis.

**E: Diabetic lumbosacral radiculoplexopathy.**

*24-year-old woman was diagnosed with MS three years ago. She has been treated with glatiramer acetate over the last year, but it was stopped recently due to injection site reactions. She is on valproate since her adolescence because of sporadic seizures. She is regularly seeing a psychiatrist due to a long lasting depression that has been difficult to treat and two previous suicide attempts. Several family members are known to have type II diabetes.*

Which drug is contraindicated in this situation ?

A: Alemtuzumab.

**B: Interferon-beta.**

C: Laquinimod.

D: Natalizumab.

E: Teriflunomid.

*A 50-year-old male reports a 2-month history of intermittent headaches, especially in supine position and during the night. Over the last two weeks, the headaches have worsened and occasionally associated with vomiting. The most recent headache attack occurred yesterday whilst the patient was resting, and was associated with a short period of unconsciousness.*

Which diagnosis applies best to this case?

A: Basilar artery migraine.

B: Chiari Malformation.

C: Episodic cluster headache.

D: Hypnic headache.

**E: Third ventricle colloid cyst.**

*A 35-year-old male consults a neurologist because of increasing difficulty with walking. His mother died at an early age and no further medical data are known but his mother's elder brother suffers from the same problem. On examination there was a high stepping gait with foot drop, high arched feet with hammer toes. There was muscle wasting in the lower legs and of the interossei as well. Tendon reflexes were absent, with loss of deep sensation but pain sensation was practically normal. Nerve conduction velocities were severely decreased.*

Which is the most probable genetic abnormality in this patient?

A: Dynamic mutation.

**B: Gene-duplication.**

C: Mitochondrial DNA-mutation.

D: So far unknown mutation.

E: X-linked recessive mutation.