

## Multiple choice questions

1. A 23-year-old woman presented with numbness which had ascended from her feet to her waist over the course of 2 weeks. She had also developed urinary urgency and frequency. By the time she was examined, she had started to improve and there were no abnormal signs apart from a sensory level to pinprick at T10. What is the most likely diagnosis?

  - A. Guillain-Barré syndrome
  - B. non-organic symptoms
  - C. spinal cord inflammation
  - D. spinal tumour
  - E. thoracic disc protrusion
2. An 18-year-old man presented with two generalised convulsions, separated by 1 month. He also gave a history that he had been 'clumsy' in the mornings for several years, his arms tending to jerk involuntarily. His uncle had epilepsy. EEG confirmed an epileptic tendency. Brain imaging was normal. What is the most appropriate drug treatment?

  - A. carbamazepine
  - B. ethosuximide
  - C. phenobarbitone
  - D. phenytoin
  - E. sodium valproate
3. A 70-year-old man presented with a 6-month history of visual hallucinations. His sitting room frequently seemed to be full of people. At other times, he was aware that they had not really been there. His wife commented that his memory had also deteriorated, though he still had 'good days'. He was more likely to become confused at night. His mini-mental state examination score was 23/30. On neurological examination, there was poverty of facial expression and mild cogwheel rigidity of the arms, worse on the left. What is the most likely diagnosis?

  - A. Alzheimer's disease
  - B. dementia with Lewy bodies
  - C. idiopathic Parkinson's disease
  - D. multiple system atrophy
  - E. schizophrenia
4. A 63-year-old woman presented with a 3-month progressive history of wasting and weakness of the right hand. On examination, there was wasting, fasciculation and weakness of the interossei and muscles of the thenar eminence on the right. There was a mild increase in tone of the right forearm. The tendon reflexes were brisker in the right arm than the left. Sensory examination was normal. What is the most likely diagnosis?

  - A. brachial plexopathy
  - B. carpal tunnel syndrome
  - C. motor neurone disease
  - D. T1 motor root lesion
  - E. ulnar neuropathy
5. A 47-year-old man presented with an abrupt onset of left-sided headache and double vision. On examination, there was partial left ptosis and impairment of elevation and adduction of the left eye. Depression of the left eye was impaired when it was in the abducted position. The left pupil was larger than the right.

Multiple choice questions

What is the most likely diagnosis?

- A. brainstem stroke
- B. cluster headache
- C. myasthenia gravis
- D. ophthalmoplegic migraine
- E. posterior communicating artery aneurysm

6. A 67-year-old woman presented with a 2-hour history of left-sided weakness affecting her face, arm and leg. She had previously been well and the weakness had developed suddenly. On examination, she was fully conscious, with mildly slurred speech and profound left-sided weakness. Blood pressure was 130/80 mm Hg. CT head scan was unremarkable with no evidence of haemorrhage.

What is the most appropriate treatment?

- A. alteplase
- B. aspirin
- C. heparin
- D. tinzaparin
- E. warfarin

7. A 56-year-old man with a history of diabetes mellitus presented with a left foot drop. On examination, there was weakness of left ankle dorsiflexion and eversion, and of dorsiflexion of the big toe. There was also impairment of pinprick sensation over the dorsum of the foot.

Which nerve has been damaged?

- A. common peroneal
- B. femoral
- C. musculocutaneous
- D. sciatic
- E. tibial

8. A 35-year-old man presented with recurrent severe headaches, each lasting approximately 40 minutes. He had been experiencing 2–3 attacks a day for 1 week, and had been woken by headache in the middle of the night several times. The pain was centred on his left eye and was associated with conjunctival injection, lacrimation and nasal discharge on that side. On examination, there was partial left ptosis and the pupil was smaller on that side.

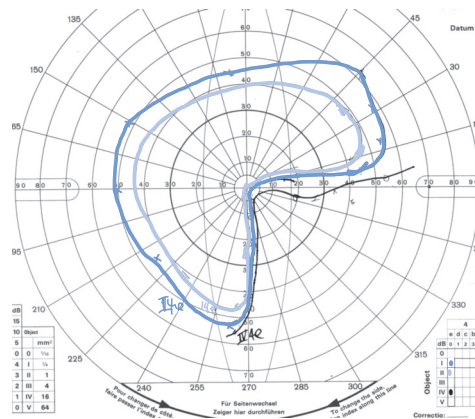
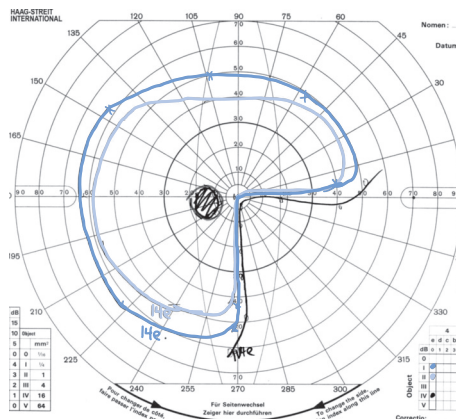
What is the most likely diagnosis?

- A. carotid artery dissection
- B. cluster headache
- C. medication misuse headache
- D. migraine
- E. posterior communicating artery aneurysm

9. A 40-year-old woman presented with the visual field defect shown in the diagram below.

What is the most likely site of the lesion?

- A. bilateral optic neuropathy
- B. left parietal lobe



### Multiple choice questions

- C. left temporal lobe  
D. right temporal lobe  
E. right parietal lobe
- 10.** A 60-year-old woman presented with an oval patch of numbness and tingling on the lateral aspect of her right thigh. She had recently gained weight. On examination, there were no abnormal signs beyond impairment of pinprick sensation in an area corresponding to the site of her symptoms, above the knee and below the hip. What is the most likely diagnosis?  
A. femoral neuropathy  
B. lumbar disc prolapse (L2)  
C. meralgia paraesthetica  
D. mononeuritis multiplex  
E. multiple sclerosis
- 11.** A 68-year-old man in a coma was able to open his eyes to painful stimuli, make incomprehensible sounds and flex (withdraw) his limbs to pain. What is his Glasgow Coma Scale score?  
A. 3  
B. 5  
C. 8  
D. 11  
E. 14
- 12.** A 30-year-old man presented with frontal balding, bilateral ptosis and facial weakness. He had difficulty releasing his grip. His father had had cataracts. What is the most likely diagnosis?  
A. Charcot–Marie–Tooth disease (hereditary motor and sensory neuropathy)  
B. Duchenne muscular dystrophy  
C. dystrophia myotonica  
D. mitochondrial myopathy  
E. myasthenia gravis
- 13.** A 65-year-old woman was treated for Parkinson's disease with pramipexole. What is this drug's mechanism of action?  
A. dopamine agonist  
B. dopamine precursor  
C. dopamine release stimulator  
D. dopamine reuptake blocker  
E. monoamine oxidase B inhibitor
- 14.** A 58-year-old man presented with a 3-month history of asymmetrical pain, wasting and weakness of the thighs. On examination, there was wasting of the right quadriceps more than the left, with weakness of hip flexion and knee extension bilaterally, and absent lower limb tendon reflexes. Vibration sensation was absent at the toes and ankles; pinprick and light touch sensation were impaired in a stocking distribution bilaterally. Which investigation is most likely to be diagnostic?  
A. blood glucose  
B. chest X-ray  
C. EMG  
D. ESR  
E. MRI lumbar spine
- 15.** A 27-year-old woman saw zigzag shapes in her left visual field, which spread over the course of 15 minutes, resulting in a complete left homonymous hemianopia which then took a further 15 minutes to resolve. What is the most likely diagnosis?  
A. hypoglycaemia  
B. migraine aura  
C. occipital epilepsy  
D. optic neuritis  
E. transient ischaemic attack
- 16.** A 59-year-old man with a history of alcoholism and malnutrition presented in an acute confusional state. He was treated with intravenous fluids and his condition worsened. On examination, he had bilateral sixth nerve palsies, nystagmus and ataxia. What is the most likely diagnosis?  
A. alcohol withdrawal syndrome  
B. brainstem encephalitis  
C. posterior circulation stroke  
D. posterior fossa tumour  
E. Wernicke's encephalopathy

## Multiple choice questions

- 17.** A 23-year-old woman presented with a 3-week history of progressive difficulty swallowing and slurred speech. She had experienced nasal regurgitation of liquids. Her symptoms were worse in the evenings. On examination, she had nasal speech, bilateral ptosis, worse on the left, bilateral facial weakness, weakness of neck flexion and of the proximal upper and lower limb muscles.

What is the most likely diagnosis?

- A. dystrophia myotonica
- B. Guillain-Barré syndrome
- C. motor neurone disease
- D. multiple sclerosis
- E. myasthenia gravis

- 18.** Which member of the neurological multidisciplinary team is responsible for a patient's wheelchair assessment?

- A. consultant neurologist
- B. occupational therapist
- C. physiotherapist
- D. social worker
- E. ward sister

- 19.** Which member of the neurological multidisciplinary team is responsible for a patient's swallowing assessment?

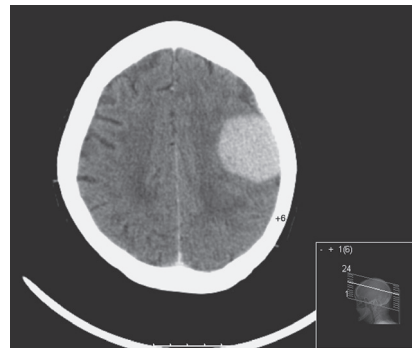
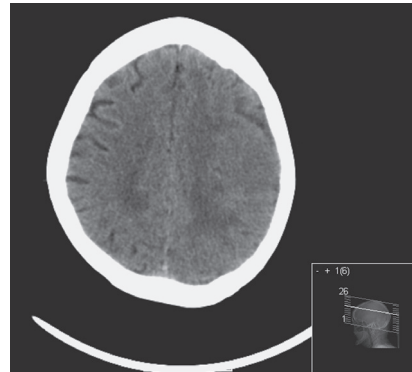
- A. occupational therapist
- B. physiotherapist
- C. social worker
- D. speech and language therapist
- E. ward sister

- 20.** A 78-year-old woman presented with painful diabetic neuropathy.

Which would be the drug of first choice to treat her pain?

- A. amitriptyline
- B. codeine
- C. gabapentin
- D. morphine
- E. paracetamol

- 21.** Examine this CT head scan (pre- and post-intravenous contrast, above and below, respectively).



What is the likely diagnosis?

- A. cerebral abscess
- B. cerebral infarct
- C. glioma
- D. intracerebral haemorrhage
- E. meningioma

### Multiple choice questions

22. Examine this CT head scan.



What is the likely diagnosis?

- A. cerebral abscess
- B. cerebral infarct
- C. glioma
- D. intracerebral haemorrhage
- E. meningioma

23. Examine this CSF profile.

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Clear, colourless fluid	
Total protein	0.5 g/L (0.15–0.45)
Glucose	4.4 mmol/L (3.3–4.4)
White cell count	180/ $\mu$ L ( $\leq$ 5)
Lymphocyte count	90% (60–70)
Gram stain	No organisms seen

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What is the most likely diagnosis?

- A. bacterial meningitis
- B. Guillain-Barré syndrome
- C. subarachnoid haemorrhage
- D. tuberculous meningitis
- E. viral meningitis

24. Examine this CSF profile.

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Clear, colourless fluid	
Total protein	2.8 g/L (0.15–0.45)
Glucose	4.4 mmol/L (3.3–4.4)
White cell count	2/ $\mu$ L ( $\leq$ 5)
Lymphocyte count	100% (60–70)
Gram stain	No organisms seen

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What is the most likely diagnosis?

- A. bacterial meningitis
- B. Guillain-Barré syndrome
- C. subarachnoid haemorrhage
- D. tuberculous meningitis
- E. viral meningitis

25. Examine this CSF profile.

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Clear, colourless fluid	
Total protein	2.8 g/L (0.15–0.45)
Glucose	0.5 mmol/L (3.3–4.4)
White cell count	180/ $\mu$ L ( $\leq$ 5)
Lymphocyte count	90% (60–70)
Gram stain	No organisms seen

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What is the most likely diagnosis?

- A. bacterial meningitis
- B. Guillain-Barré syndrome
- C. subarachnoid haemorrhage
- D. tuberculous meningitis
- E. viral meningitis

## Answers to multiple choice questions

- 1.** C – the truncal sensory level and bladder involvement suggest a cord lesion rather than peripheral neuropathy. The improvement is against a structural cause (tumour, disc).
- 2.** E – the combination of generalised convulsions, morning myoclonus and a family history of epilepsy strongly suggests a diagnosis of juvenile myoclonic epilepsy, for which sodium valproate is the treatment of first choice. The situation is more complicated in young women, because of this drug's potential teratogenicity.
- 3.** B – cognitive impairment associated with visual hallucinations, fluctuations with nocturnal confusion, and extrapyramidal signs indicates a diagnosis of dementia with Lewy bodies.
- 4.** C – the weakness extends beyond the distribution of a single peripheral nerve. The presence of upper and lower motor neurone signs in the same limb strongly suggests motor neurone disease, which is often asymmetrical in onset.
- 5.** E – a posterior communicating artery aneurysm compressing the oculomotor nerve may present with a painful 'surgical' third nerve palsy – partial in this case.
- 6.** A – with stroke onset less than 3 hours previously, this normotensive woman with no history of a bleeding tendency is a candidate for thrombolysis with intravenous tissue plasminogen activator (alteplase).
- 7.** A – diabetes renders nerves sensitive to pressure, and this nerve is often compressed as it winds around the fibular neck.
- 8.** B – the periodicity of the attacks and the autonomic accompaniments suggest a diagnosis of cluster headache, which can lead to a full-blown Horner's syndrome, as in this case.
- 9.** B – see caption to Fig. 4.3 for explanation.
- 10.** C – the sensory impairment is in the distribution of the lateral cutaneous nerve of the thigh, which may be compressed as it passes under the inguinal ligament, resulting in the syndrome of meralgia paraesthetica, which is often associated with changes in weight.
- 11.** C – eyes 2, verbal 2, motor 4.
- 12.** C – difficulty releasing grip is a symptom of myotonia. This patient conforms to a classical description of dystrophia myotonica, one of the most common muscular dystrophies to present in adult life.
- 13.** A
- 14.** A – this patient's clinical features are typical of diabetic amyotrophy (diabetic proximal neuropathy). He has a coexistent diabetic distal sensory neuropathy.

### Answers to multiple choice questions

- 15.** B – the slow evolution of the visual symptom (minutes rather than seconds or fractions of a second) favours migraine over epilepsy or transient ischaemic attack, as does the description of ‘zigzags’.
- 16.** E – the classical triad of ophthalmoplegia, ataxia and confusion, in an at-risk patient, indicates Wernicke’s encephalopathy, for which urgent treatment with thiamine, initially intravenously, is required. The patient’s condition may have deteriorated in hospital because of intravenous dextrose administration, without concomitant thiamine.
- 17.** E – rapidly progressive bulbar palsy in a young woman, with a history of fatigability, is in keeping with a diagnosis of myasthenia gravis, as is the associated ptosis and facial weakness. Motor neurone disease may also present with progressive bulbar palsy but the patient is in the wrong age group and there are no upper motor neurone signs.
- 18.** B
- 19.** D
- 20.** C – tricyclic antidepressants and anti-epilepsy drugs are more likely to be effective against neurogenic pain than conventional analgesics. In an older patient, gabapentin is likely to be better tolerated than amitriptyline.
- 21.** E
- 22.** B – this scan was performed 4 days after the infarct and considerable swelling is evident, mimicking a tumour, but the density of the lesion is uniformly low and the margins conform to middle cerebral artery territory.
- 23.** E – CSF lymphocytosis with relatively normal protein and glucose.
- 24.** B – raised protein with normal white cell count, the classical ‘albuminocytological’ dissociation of Guillain–Barré syndrome.
- 25.** D – CSF lymphocytosis with raised protein concentration and very low glucose.