QUESTION 1

A 45-year-old male developed nausea, abdominal cramps, and diarrhoea that persisted for several days whilst on holiday in the Caribbean. There, he had eaten a normal diet including fruit, vegetables, meat and fish (red snapper and grouper). Within 48 hours of the initial symptoms he developed intense itching of his feet with a painful, burning sensation affecting soles and palms; these symptoms were exacerbated by alcohol.

A month later he was still experiencing the burning sensation on the soles. He had also noted an odd feeling in his tongue and that cold objects felt hot or, less often, vice versa. There was no relevant family history or past medical history, apart from hay fever and hypertension.

Examination was normal, other than a borderline abnormal tandem gait.

Investigations
- Routine blood tests: normal
- Eosinophils: $1.9 \times 10^9/L$ (0.04–0.4)
- Creatine kinase: 195 U/L (24–195)
- IgA kappa paraprotein: 4.2 g/L (0.8–3.0)
- IgM and IgG: normal
- Urinary Bence-Jones proteins: negative.
- EMG & NCS studies: normal, no evidence of conduction block or F-wave dispersion. Thermal thresholds to hot and cold were abnormal on the hands and feet and the mild temperature changes used for testing temperature sensation elicited marked pain.

The symptoms slowly resolved and thermal thresholds improved over a period of about 6 months.

Which of the following diagnoses is the most likely?

ANSWER OPTIONS

A Caribbean neuropathy
B Ciguatera poisoning
C Coproporphyria
D Guillain-Barre Syndrome
E IgA paraproteinaemic neuropathy
QUESTION 2

A 17-year-old girl presented with several months of increasing clumsiness, loss of balance and aggressive outbursts. Her father died at the age of 39 having had a 12 year history of behavioural changes and depression requiring long term care for the last 6 years of his life. Her paternal grandmother had developed a dementia in her 40’s.

On initial examination, she had mild limb bradykinesia and paucity of eye movement in all directions. There was also mild cognitive impairment especially on frontal executive tests.

Follow up over the next few years confirmed worsening cognitive problems of a fronto-executive nature, increasingly restricted eye movements, and bradykinesia. She eventually died 10 years after disease onset.

What is the most likely diagnosis?

ANSWER OPTIONS

A Huntington’s disease
B Neuroacanthocytosis
C Neurodegeneration with Brain Iron Accumulation (NBIA - formerly called Hallervorden-Spatz disease)
D Niemann-Pick type C
E SLE
QUESTION 3

An 84-year-old woman presented with a 2 month history of auditory hallucinations lasting up to an hour and occurring 2-4 times a day. The hallucinations were musical and took the form of hymns, particularly “Jerusalem”, or the national anthem. She had a past history of migraine, hypothyroidism and progressive hearing loss requiring hearing aids. Her migraine was predominantly left sided and there was no associated aura.

Neurological examination was normal other than the hearing loss.

Investigations:

- EEG: minor bitemporal paroxysmal irregularities showing no association with the reported (concurrent) hallucinations
- CT brain scan: small vessel ischaemic changes

What is the most likely diagnosis?

ANSWER OPTIONS

A Auditory Charles-Bonnet Syndrome
B Ictal hallucinations
C Migrainous hallucinations
D Psychiatric disturbance
E Tumour of superior temporal gyrus
QUESTION 4

A 33-year-old woman described attacks which first began in early childhood. On each occasion her arm, usually the left but sometimes the right, would flex at the elbow and the fist clench. During the attack she would limp because of symptoms in the ipsilateral leg and sometimes the attack would be so severe that she fell. She would appear glazed and sometimes be unable to speak but she never lost consciousness. The episodes would last on average about 10 minutes (with a range of 5 - 45 minutes) and occurred several times each year. Attacks were more common when tired, sometimes occurring with exercise, and sometimes after alcohol. Her mother may have been similarly affected. On examination (in between attacks) there were no neurological signs.

Which of the following is the most likely diagnosis?

ANSWER OPTIONS

A Dopa-responsive dystonia
B Frontal lobe epileptic seizures
C Paroxysmal attacks of demyelination
D Paroxysmal dystonic choreoathetosis
E Paroxysmal kinesigenic choreoathetosis
QUESTION 5

A 23-year-old woman presented with a 5 week history which began in Uganda, where she had been working. Initially, she had been unwell, with diarrhoea and vomiting. She then improved but noted a pain on one side of her chest. She then developed an evolving frontal headache, which had remained ever since. Initially it was most prominent on sitting up. Over the next few weeks she developed intermittent double vision, neck stiffness, muffled hearing in both ears, left-sided tinnitus and headaches in all positions. She had felt unwell and a Ugandan doctor had measured her temperature, which was normal, and done blood tests for typhoid which were “positive”. She had been given some tablets.

She returned home and rested, but her headache worsened, especially with exertion. She developed a patch of numbness over the right forehead and diplopia on rightward gaze.

Examination. She looked well and was apyrexial. No meningism and no systemic abnormalities. Fundi normal. Right VIth nerve palsy and altered sensation in the right V.1 distribution. Reluctant to stand and walk, but able to do so with no abnormality of gait.

Investigations

- Routine blood tests: normal.
- MRI brain: gadolinium-enhancing meninges, especially around the cavernous sinus. Possible pituitary enlargement.
- CSF: normal (pressure not recorded).

Which diagnosis best accounts for the clinical picture?

ANSWER OPTIONS

A Cerebral malaria
B Low CSF pressure (volume) syndrome
C Sarcoidosis
D Tuberculosis
E Typhoid
QUESTION 6

A 59-year-old woman was admitted to hospital in coma. Her daughter reported that this had evolved over the last 3 hours, having been well on awakening that morning. She reported four similar previous admissions over the last 10 years, with rapidly evolving coma, requiring mechanical ventilation on two occasions. Each time a complete recovery ensued, and she was well in between attacks. Her past history included reimplantation of both ureters into the sigmoid colon following a childhood road traffic accident.

Examination findings: Glasgow coma score V1, E1, M4. Her blood pressure was 75/30mmHg and her pulse rate 110 bpm regular. Cardiovascular, respiratory and abdominal examinations were otherwise normal and there were no localising neurological signs.

Investigations:
- Full blood count: normal
- Sodium 145 mmol/L (137–144)
- Potassium 3.9 mmol/L (3.5–4.9)
- Chloride 112 mmol/L (95–107)
- Bicarbonate 15 mmol/L (20–28)
- Urea 7.5 mmol/L (2.5–7.5)
- Creatinine 74 µmol/L (60–110)
- Arterial blood gases (on 28% oxygen):
  - pO2 26 kPa (11.3–12.6)
  - pCO2 3.72 kPa (4.7–6.0)
  - Hydrogen ion 33 nmol/L (35–45)
- Liver function tests and C-reactive protein: normal.
- CT brain: normal

Which of the following investigations is most likely to yield the correct diagnosis?

ANSWER OPTIONS

A Electroencephalogram
B Lumbar puncture
C MR brain scan
D Serum ammonia
E Urine toxicology screen
QUESTION 7

Gary and Freddy were 20 year old school friends. Having led a couch-potato life they decide to “get fit” and to start their new regime by cycling to a friend’s 21st birthday party. They don’t make it.

Gary set off up a steep hill and within minutes developed pain in his thighs. He stopped and rested and the pain quickly resolved. He remounted and continued up the hill, but again within a few minutes developed pain. He slowed down and the discomfort eased; he was able to continue his journey for another 20 miles before stopping for the night.

The following morning he set off again, up another hill, confident that he would find it easier on the second day. Within minutes he developed excruciating pain and cramps in his thighs. He staggered from his bike and lay beside the road. The pain eased only slightly. A passer-by came to his rescue and took him to the local casualty department. On micturition he passed coca-cola coloured urine. His blood test showed a creatine kinase of >250,000 U/L (24–195) and features of acute renal failure.

Freddy managed the first 20 miles without difficulty, but over the next few miles his legs became painful. The next day he managed a similar distance before the pain returned and by the time he stopped felt exhausted and generally unwell.

The following morning he was still aware of some aching in his legs but decided to continue on his way. After only 5 miles his legs became extremely painful. He had to stop, and when he got off his bike his legs gave way. A passer-by came to his rescue and took him to the local casualty department. On micturition he passed coca-cola coloured urine. His blood test showed a creatine kinase of >250,000 U/L (24–195) and features of acute renal failure.

Which statement is the most correct?

ANSWER OPTIONS

A Both have a mitochondrial myopathy
B Both have carnitine palmitoyltransferase deficiency
C Both have McArdle’s disease (myophosphorylase deficiency)
D Gary has McArdle’s disease and Freddy carnitine palmitoyltransferase deficiency
E Gary has carnitine palmitoyltransferase deficiency and Freddy McArdle’s disease
QUESTION 8

A 37-year-old man presented with a 4-day history of severe left-sided occipital and retro-orbital headache, nausea, slurred speech and fever. There was no history of trauma. Four years before he had been started on lifelong warfarin, after developing two deep venous thromboses associated with the Factor V Leiden mutation.

Examination. Left-sided Horner's syndrome, torsional nystagmus worse on left lateral gaze, partial left-sided sixth nerve palsy and left-sided palatal palsy. He had a bovine cough, left-sided limb ataxia and crossed spinothalamic sensory loss. Cardiovascular and general medical examination were normal.

The clinical diagnosis was confirmed on MR brain scan and MR angiogram (see Figure 1).

His anticoagulation was continued.

Two weeks later he suddenly deteriorated, with bifrontal headache, drowsiness, neck stiffness and horizontal diplopia. Examination showed new onset of right-sided gaze palsy and torsional nystagmus in all directions of gaze.

His INR was 1.8. A CT brain scan was performed (see Figure 2).

Figure 1: MR brain and MR angiogram at initial presentation

Figure 2: CT brain after deterioration
What is the likely underlying cause for his deterioration?

**ANSWER OPTIONS**

A Cortical venous thrombosis

B Infective endocarditis

C Pseudoaneurysm rupture

D Spontaneous intracerebral haemorrhage (over anticoagulation)

E Venous sinus thrombosis
QUESTION 9

A 32-year-old trainee dental surgeon presented with pins and needles and felt slight numbness of both feet, which had developed within the preceding week. Over the subsequent week the numbness had risen to his shins and he had noticed that his fingertips felt as if they were covered in cotton wool. His girlfriend commented that his walking had become unsteady. He had also experienced difficulty maintaining erections with the last few days. When seen, he described numbness over all his arms and legs and over the anterior aspect of his abdomen. He also noticed an ‘electrical tremor’ sensation down his body when he bent forward. His sphincters were intact.

He had never been unwell before. During an elective period of his training two years ago he had spent 2 months in the South Pacific. He was a smoker of tobacco and occasionally cannabis. He dabbled from time to time in other recreational drugs such as magic mushrooms, ecstasy and cocaine. He drank little alcohol.

Examination.

Cranial nerves: normal.

Arms: tone was normal, mild distal weakness more on the left, and occasional proprioceptive errors at the finger tips. Finger-nose coordination was normal but he had difficulty tying his shoelaces.

Legs: Tone mildly increased, some weakness of hip flexion and ankle dorsiflexion bilaterally. Ankle jerks seemed reduced compared to the knee jerks. The right plantar response equivocal. Patchy reduction to pinprick over the limbs and trunk. Vibration sense was reduced to the costal margins.

Investigations

Full blood count normal except for a macrocytosis: MCV: 106 fL (80–96) Urea, electrolytes, liver & thyroid function tests, plasma glucose all normal

What is the most likely cause of this man’s presentation?

ANSWER OPTIONS

A Alcoholic neuropathy

B B12 myeloneuropathy due to Pernicious Anaemia

C Chronic nitrous oxide abuse

D First presentation of MS as cervical cord transverse myelitis

E Tropical spastic paraparesis
QUESTION 10

A 35-year-old woman was referred for review with a progressive deterioration in her muscle strength despite treatment initiated 10 years previously. Since that time, she had no other significant illnesses and her medication remained the same.

As a child she attained normal motor milestones and was a keen gymnast until the age of 15. She then took up hockey to a high level until her early 20s when she developed a painful swelling of her left posterior calf muscles. This was treated with non-steroidal analgesics for four weeks and the pain improved. Some time later, she developed similar pain in the other calf which led to her original referral. Two open muscle biopsies taken at the time from the right gastrocnemius and quadriceps muscles were reported to show an inflammatory myopathy with a prominent inflammatory cell infiltrate. She had therefore been started on prednisolone at a dose of 60 mg a day for a month, and the dose was then tapered gradually down to a maintenance level of 10 mg a day, which she had continued to take. The GP was concerned she had developed a steroid myopathy.

On examination she had moderate proximal arm weakness but her hands were strong. She was unable to stand up from a normal chair without using her arms but could walk unaided. She could rock back onto her heels but was unable to stand on tiptoe. Reflexes were just present. The remainder of the neurological examination was normal. There was no muscle hypertrophy.

What is the most appropriate next step?

ANSWER OPTIONS

A  Increase her steroid dose without further investigation

B  Introduce a steroid-sparing agent such as azathioprine, after first checking the TPMT

C  Repeat the quadriceps biopsy to assess if the inflammatory process has been inadequately suppressed

D  Request an EMG to look for neurophysiological evidence in keeping with steroid myopathy

E  Review her original muscle biopsies
QUESTION 11

A 30-year-old man was referred to clinic with numb and weak arms and legs which had slowly progressed over 10 years.

He first became aware of a problem at the age of 20, when he would frequently cut his feet without realising that he had done so. He later developed troublesome lancinating pains in his feet which responded only to high doses of Gabapentin. Over the next few years he was increasingly aware of numbness in his legs up to his knees and in his hands and developed distal weakness of his feet and hands. He now required splints to walk any distance. He was unable to do buttons or zips and writing was also severely limited. There were no other neurological or systemic symptoms. He was adopted but had heard that his biological mother had “funny feet” and needed splints to walk.

Examination showed normal cranial nerves. He had distal wasting and weakness of his hands and feet. His intrinsic hand muscles were MRC grade 4 bilaterally and his ankle dorsiflexion was grade 2 bilaterally. He had a small ulcer on his big toe. He had reduced pin prick sensation to the mid-thigh and mid-forearm; vibration was reduced to the ankles but was present in the upper limbs and proprioception was normal. He was areflexic.

Nerve conduction tests showed absent sensory nerve action potentials throughout. Median nerve motor action potentials (measured over APB) were 7.6mV on the right with a conduction velocity in the forearm of 27m/s and 5.4 mV on the left wrist, with a conduction velocity of 27 m/s. Ulnar and lower limb motor conduction studies were similar.

Which diagnosis bests accounts for the clinical picture?

ANSWER OPTIONS

A Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP)

B CMT1 due to the chromosome 17 duplication

C CMT1 with superimposed CIDP

D Hereditary sensory and autonomic neuropathy type 1 (HSAN1) due to a mutation in serine palmitoyl transferase long chain base sub unit 1 (SPTLC1)

E X-linked Charcot-Marie-Tooth disease (CMT) due to a connexin 32 mutation
QUESTION 12

A 55-year-old right-handed woman was noted at a routine eye test to have bilateral papilloedema. She did not complain of any new headaches or visual symptoms. When assessed in the eye clinic, the papilloedema was confirmed but it was noted that she had normal visual acuities, visual fields and pupillary reactions. The ophthalmologists organised a CT head, MRI head and MRV, all of which were normal. She was then referred to Neurology service.

She was said to have had ‘petit mal’ seizures from 7-10 years of age. There was also a background history of migraine since the age of 20, with more recent symptoms of migraine aura (visual and sensory). Her general health had remained good until 5 years earlier when she was diagnosed with hypothyroidism and started to suffer from Raynaud’s phenomenon and some early morning joint stiffness in the hands. She had also complained of intermittent numbness of her hands, which in the last 12 months had become more persistent with numbness over tips of fingers and toes and burning under balls of feet with deterioration in balance. During the last year she had also complained of night sweats, fatigue and lost ½ stone in weight. Apart from infrequent simple analgesics for headaches and thyroxine she was taking no other medication, illicit drugs or herbal remedies. She had a modest alcohol consumption, was a non-smoker, with no HIV risk factors or recent foreign travel and there was no family history of note.

Neurological examination revealed signs of a mild symmetrical sensory neuropathy in addition to bilateral papilloedema. The following investigations were abnormal:

Abnormal investigations:
- platelets: $501 \times 10^9/L (150–400)$
- serum creatinine: $124 \mu mol/L (60–110)$
- serum alkaline phosphatase: $132 U/L (45–105)$
- serum phosphate: $1.51 mmol/L (0.8–1.4)$
- complement C4: $56 mg/dL (14 - 54)$
- serum immunoglobulin A: $4.5 g/L (0.7–4.0)$

Normal/negative investigations:
- B12, folate, coagulation screen, TFTs, Vitamin E, serum ACE
- ESR, CRP, serum protein electrophoresis, complement C3, cryoglobulins, ANA, ENA, ANCA, RhF, ACL, coeliac Abs, anti-neuronal Abs, anti-TPO, VDRL
- urinary protein and calcium excretion
- urinary Bence-Jones protein

Cerebrospinal fluid (performed twice)
- opening pressure: $100 \text{ mmH}_2\text{O (50–180)}$
- total protein: $0.97 g/L (0.15–0.45)$
- otherwise normal, including cells, glucose, negative cytology, ACE and oligoclonal bands.

Other investigations:
- CXR: normal
- skeletal survey: normal
- CT chest/abdomen: 16cm spleen, incidental small liver cyst, otherwise normal.
- Visual evoked potentials: normal

Which of the following investigations clinched the diagnosis?
ANSWER OPTIONS

A Bone marrow biopsy
B Bronchial biopsy and lavage
C Meningeal biopsy
D Nerve & muscle biopsy
E Rectal biopsy
QUESTION  13

A 75-year-old man presented with an episode of sudden-onset loss of vision in his left eye only, lasting a few seconds. Over the next few days, he had two episodes of difficulty finding words, associated with clumsiness of the right hand. The most recent episode took about an hour and a half to resolve.

Neurological examination was normal. His blood pressure was 150/95 mmHg.

Results of investigations:
FBC, ESR, glucose, U&E, LFT’s: normal
serum cholesterol: 5.5 mmol/L (<5.2)
ECG: normal
Carotid Doppler Ultrasound: irregular stenosis of the left internal carotid artery measuring about 70% by the NASCET method, confirmed by contrast-enhanced MRA.

He was started on conventional secondary preventative medication. His son, a cardiologist, was keen for his father to undergo carotid stenting. The experienced local vascular surgeon was able to offer an operation slot for carotid endarterectomy within a week.

Which option should the patient be advised is the most appropriate?

ANSWER OPTIONS

A Avoid surgery: maximise medical therapy with aspirin, statin, ACE inhibitor and diuretic

B Carotid endarterectomy within a week.

C Delay surgery until an intra-arterial angiogram has confirmed the degree of carotid stenosis and the extent of any intracranial arterial pathology

D Hospital admission and anticoagulation with low molecular weight heparin

E Immediate carotid stenting by an experienced interventional radiologist
QUESTION 14

A 51-year-old man with no past medical history was seen in the neurology outpatient department complaining of a 4-month history of recurrent vertigo and nausea. The attacks were of variable intensity and duration, lasting minutes to hours. There were no other associated symptoms during the acute vertigo.

He saw his general practitioner in the first week of his symptoms and was prescribed prochlorperazine for 14 days without any change in his symptoms. During the first month after symptom onset, he had on average 3 attacks per week. He went to the local A&E department following one of these episodes and was reviewed by a neurology SpR who recorded a normal neurological examination. A routine neurology outpatient appointment was arranged and a referral to the ENT department. When seen in the ENT clinic, a pure tone audiogram was arranged, but this was normal.

After 6 weeks of recurrent attacks, the patient noticed that the frequency and intensity of attacks started to wane and within 3 months of their onset they had stopped. However, in parallel with the improvement in these attacks, he noticed progressive clumsiness in his gait and found that objects in his visual field tended to move back and forth. The sensation of movement was present only during head motion. His symptoms had stabilised, but not improved, in the 4 weeks prior to his assessment.

Which clinical test is most likely to yield the diagnosis?

ANSWER OPTIONS

A  Dix-Hallpike manoeuvre
B  Head thrust (or head impulse) test
C  Tandem walking
D  Unterberger’s test
E  Vestibular ocular reflex suppression
QUESTION 15

A 63-year-old woman presented to A & E having woken with slurred speech and swallowing difficulties. She was a smoker and was being treated for hypercholesterolaemia. Five years previously she had suffered a stroke that resulted in left arm weakness which had largely recovered. She had no family history of note and she was taking only simvastatin.

On examination she had bilateral facial weakness with difficulty in spontaneous eye closure. When emotional, her facial movements appeared preserved. She had dysphagia with impaired movement of the soft palate bilaterally and slow tongue movements. In the limbs there was no muscle wasting or fasciculation and muscle power was preserved except for mild left arm weakness. Deep tendon reflexes were brisk but plantar responses flexor. Cognitive function appeared to be intact and there was no evidence of a central language deficit.

Results of investigations:
Basic blood tests performed in A+E were normal.
CXR normal
ECG sinus rhythm, no acute changes

Which diagnosis is most likely?

ANSWER OPTIONS
A Foix-Chavany-Marie syndrome
B Herpes simplex encephalitis
C Motor neurone disease
D Myasthenia gravis
E Stroke producing infarction of the right pars opercularis
QUESTION 16

A 34-year-old male presented with chronic back pain, fatigue, sleep disturbance and poor concentration after a car accident three years earlier. He complained his right leg was weaker than his left. He commented spontaneously that sometimes his back pain was so bad he thought about throwing himself off a local bridge, and said that he was unable to enjoy life at present, due to the pain. However, he emphatically denied depression when asked directly. The GP referral letter mentioned a ‘personality disorder’ some years earlier, but no other details were known.

During the consultation his eye contact was poor and he looked miserable. Examination revealed a global weakness of his left leg with a positive Hoover’s sign only. He became angry at the neurologist’s subsequent suggestion that he had any kind of psychological problem.

Which of the following best describes whether or not he has a depressive disorder?

ANSWERS

A   He does not feel depressed - therefore he does not have a depressive disorder.
B   He is depressed because of his physical symptoms but that does not mean he has a depressive disorder.
C  He probably has a major depressive disorder with suicidal ideation.
D  He probably has non-organic weakness and therefore it doesn’t matter whether he has a depressive disorder or not.
E   His diagnosis of personality disorder means that it is not possible to know whether he is depressed or not.
QUESTION 17

An 85-year-old woman presented to the accident & emergency department having woken at 05:00 hrs with a right hemiparesis, expressive aphasia and tingling around the mouth and right leg. By 07:00 hrs her symptoms had resolved completely. On the two preceding days she has woken with identical symptoms, of a similar duration, each time recovering spontaneously.

She had type 2 diabetes treated with insulin and glimepiride, hypercholesterolaemia treated with simvastatin, and poorly controlled hypertension. Five years previously a squamous cell lung cancer had been treated with radiotherapy.

Clinical examination was normal.

Results of investigations:
Full blood count, ESR, urea and electrolytes and glucose: normal.
CT scan of brain:

What is the most likely cause of her symptoms?

ANSWER OPTIONS

A Hypoglycaemia
B Isodense subdural haematoma
C Primary sleep disorder
D Recurrent transient ischaemic attacks
E Todd's paresis
QUESTION 18

A 56-year-old man suddenly began to slur his words 2 hours prior to his arrival in the accident & emergency department, and subsequently deteriorated with increasing weakness down his right side. He had a past history of diabetic retinopathy with laser treatment 9 months earlier. He had a myocardial infarction at the age of 53, and reported frequent shortness of breath on exertion. He was taking aspirin, nitrates, insulin, a statin, and a beta blocker.

Examination revealed a dense right hemiparesis involving face, arm and leg, but no other neurological signs. He was in atrial fibrillation with a blood pressure of 180/100 mmHg.

30 minutes later (i.e. 2 and a half hours after the onset of symptoms), an unenhanced CT brain scan was performed:

![CT Brain Scan](image)

Your SHO suggested that he should receive immediate intravenous thrombolysis. Which is the correct response?

**ANSWER OPTIONS**

A Although he is within the time frame to consider thrombolysis, rtPA is contraindicated in his case because of retinopathy.

B As he has presented with a lacunar syndrome, probably due to small vessel disease, intravenous thrombolysis is unlikely to be effective.

C His blood pressure must be reduced to at least 150/95 with appropriate hypotensive therapy before thrombolysis can be given safely.

D In view of his AF, intravenous heparin is a more appropriate treatment than thrombolysis.

E Intravenous rtPA should be given.
QUESTION 19

A 77-year-old man presented with a several month history of headache associated with a raised ESR (70-80mm/hr). The GP had initiated treatment 3 weeks earlier with oral prednisolone at a dose of 30mg daily. Following polypectomy from the left ear the patient’s condition had deteriorated with a low-grade fever, increasing confusion, and multiple lower cranial nerve palsies (left VI, bilateral VIII, left X and bilateral XII).

Investigations confirmed a persistently elevated ESR and, after imaging, (see images 1a & 1b – pre- and post-Gd sagittal T1), a lumbar puncture was performed with the following results:

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total protein</td>
<td>1.2 g/L (0.15–0.45)</td>
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<tr>
<td>Glucose</td>
<td>3.0 mmol/L (3.3–4.4) (plasma glucose 5.5mmol/L)</td>
</tr>
<tr>
<td>Cell count</td>
<td>65/µL (≤5) (85% lymphocytes)</td>
</tr>
<tr>
<td>Cytology</td>
<td>Reactive cells only</td>
</tr>
<tr>
<td>No growth on culture</td>
<td></td>
</tr>
</tbody>
</table>

Steroids were withdrawn, and broad-spectrum antibiotics administered for 10 days with modest improvement and partial resolution of the cranial nerve palsies. The patient was discharged after 4 weeks in hospital on only symptomatic therapies. He was brought back to hospital 10 days later in a moribund state. A further CT was performed (image 2 – post-contrast CT). Repeat CSF sampling yielded the following results:

<table>
<thead>
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<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Total protein</td>
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</tr>
<tr>
<td>Cell count</td>
<td>1600/µL (≤5) (mixed neutrophils/lymphocytes)</td>
</tr>
<tr>
<td>Glucose</td>
<td>&lt;1 mmol/L (3.3–4.4)</td>
</tr>
<tr>
<td>Culture negative</td>
<td></td>
</tr>
</tbody>
</table>
Which of the following statements is correct?

**ANSWER OPTIONS**

A  Carcinomatous meningitis is the likeliest diagnosis

B  Malignant otitis externa is the likeliest diagnosis

C  Negative CSF culture results exclude TB meningitis

D  Repeat CSF culture 10 days after antibiotic withdrawal would have been positive in an infective process

E  Temporal artery biopsy, prior to steroid therapy, would have yielded a diagnosis
QUESTION 20

A 67-year-old man reported around twelve episodes of amnesia occurring over the past two years. He had a hazy memory for not being able to remember on some of these occasions. His wife added that her husband had been unable to recall recent events at these times, and unable to take on board the information she has supplied until close to the end of the episode. In one attack he was puzzled by the open suitcase beside the wardrobe, and had clearly forgotten that they were due to go abroad on the following day. Two of the episodes occurred on waking. All had been quite brief, lasting around half an hour.

He was otherwise well, though was recently upset by the death of an older sister. Apart from this, there was no evidence of depression or anxiety. Discussion of his memory between attacks revealed that he had recently noticed a persistent, patchy, difficulty in recalling memorable events from his past life, including holidays abroad and a daughter's wedding. He had previously been able to reminisce about these. He also mentioned that recent events appeared to slip from his memory more rapidly than he would expect: for example, he could remember very little of a trip to the Lake District three weeks earlier, or of his sister's funeral.

He had been well in the past except for treated hypertension over the past five years. He was taking bendroflumethiazide and atenolol. He was an ex-smoker and drank 20 units/week, mainly as red wine.

He had worked as a structural engineer until retirement and had always been a keen traveller. There was no relevant family history.

What is the most likely cause of his memory disturbance?

ANSWER OPTIONS

A Migraine equivalents

B Psychogenic amnesia

C Transient epileptic amnesia, occurring as a manifestation of temporal lobe epilepsy

D Transient global amnesia

E Transient ischaemic attacks in the vertebrobasilar circulation