1. Read the case history and suggest a diagnostic test and result.

A 48-year-old butcher suffered three epileptic seizures within a few weeks, followed by a 2-month history of irritability, agitation and aggressive behaviour – leading to psychiatric assessment. Soon thereafter, executive cognitive disturbances and anterograde verbal memory difficulties with a mild right hemiparesis developed, without fever, headache or signs of raised intracranial pressure. There were no stroke-like events. General medical examination, routine laboratory investigations, ESR, auto antibodies and HIV negative. Chest Xray and CT abdomen normal. Figures a and b shows two slices of the MR FLAIR sequence. The CSF was acellular, protein 0.73 g/L, PCR negative for JC and herpes viruses. There was minimal enhancement of the right parietal and left fronto-parietal lesions. The neuroradiological opinion was of an inflammatory, rather than neoplastic disorder. A diagnostic test was performed.
2. Where is the lesion causing this appearance?
See Figures 1 and 2.

3. What is the likely cause of this patient’s meningitis?
A 31-year-old woman with mixed connective tissue disease presented a week after a change in her drug therapy with chest pain, headache, rigors, fever (up to 40.6 °C), meningism and hypotension (90/60). Blood count, cultures of blood and urine and CT of the brain were all normal. CSF opening pressure was 16 cm H₂O, 31 polymorphonuclear cells, normal protein and glucose, negative gram stain, culture and viral PCR studies.

4. (a) What are the six functional components which contribute to the cranial nerves?
(b) How many cranial nerves have only one component?

Answers on page 310.

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ANSWERS

1. Pathological and immunohistochemical studies from stereotactic biopsy material of the right frontal lesion (Figures 1 and 2) showed widespread, strictly intravascular aggregates of malignant B cells, with reactive perivascular T cells, consistent with primary angiotrophic (intravascular) large B cell lymphoma. The patient, who was immunocompetent, failed to respond to high dose steroids, further treatment was not offered and he died six months after symptoms commenced.

2. There is a fifth and sixth nerve lesion due to metastatic carcinoma of the breast involving the skull base seen on the bone scan (Figure 3) (petrous apex/medial middle cranial fossa region). Excepting advanced motor neuron disease, wasting of the temporalis and masseter muscles is a relatively uncommon neurological sign and strongly suggests a malignant basis for cranial neuropathies.

3. The patient had been changed to ibuprofen 800 mg daily. The most likely diagnosis is ibuprofen induced aseptic meningitis. This adverse reaction was first described over 20 years ago. Typically, as here, the CSF shows mainly polymorphs. Most cases occur in patients with systemic lupus erythematosus or mixed connective tissue disease, suggesting a role for the autoimmune state. Drug induced meningitis may be under-recognized.

Further reading

4. (a) The six columns of like functions in the brainstem which supply the cranial nerves are: somatic, visceral and branchial motor; somatic, visceral and special sensory. In simplest terms the individual brainstem motor nuclei are for the body wall (somatic motor), for the gut tube (visceral motor) and for the muscles that develop from the branchial arches in the head (branchial motor). Sensory neurons form sensory nuclei for the body wall of the head (somatic or general sensory), the viscera of the head, neck and trunk (visceral sensory) and the special senses (special sensory).

(b) Seven: olfactory (olfactory bulb), optic (ganglia cells of the retina) [no brainstem nuclei for cranial nerves I and II]; vestibulocochlear (special sensory); abducens, trochlear, hypoglossal (somatic motor); accessory (branchial motor).

Further reading
How good at neurology are you?

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