for the severity and duration of these symptoms. Within two hours of the first treatment I vomited. This heralded the beginning of what was to be four weeks of continuous nausea the like of which I had previously experienced only below decks in a small yacht in rough sea. After the second day's exposure I required an intravenous antiemetic and sedation. It was decided to reduce the daily dose of radiation. This increased the duration of treatment, but at least I was no longer vomiting every evening. I was given some suppositories which also helped in the evenings and brought blissful sleep. I lived like an automaton for the next four weeks. Each trip to the radiotherapy department was another dose of aversion therapy. I knew that each visit would increase my nausea and, in addition, every evening I felt as if I had flu. In such circumstances it required enormous willpower to continue. I think that without the support that I received from my wife at this time I would have thrown in the towel.

Reflections

It is now four months since my treatment finished. The nausea resolved quite quickly but was rapidly replaced by the irritable bowel syndrome. This is inconvenient but tolerable. It is un-

doubtedly exacerbated by red wine. I am assured that this should resolve; meanwhile I am enjoying the discovery of some fine whites. The tiredness remains, at some times worse than others. I resumed work 12 weeks ago, though my stamina is far from normal.

Apart from the physical and mental scars what other memories endure? Perhaps the most surprising and at times upsetting was the reaction of friends, family, and colleagues. There were those who helped immensely by their regular visits, telephone calls, and offers of help. There were others who seemed unable to broach the subject of health even by asking, "How are you?" Perhaps they feared the reply. I know this attitude is not the result of an uncaring nature—indeed, sometimes the opposite. But "Hello, how are you?" is such a normal, everyday greeting that its absence draws attention to the abnormal state of affairs. Now I have to think before I reply. I dread becoming a health bore so I usually say, "Fine, thank you." But it's nice to be asked.

Has this episode changed the way I practise? I hope not. I hope I was sufficiently patient and caring before this, though more than one person has suggested that I will be a better doctor as a result of it. Without the vasectomy I don't know if the tumour would have been diagnosed later than it was. The irony is that with the combination of orchidectomy and radiotherapy I probably didn't need it.

Lesson of the Week

Dangers of lumbar puncture

P G RICHARDS, E TOWU-AGHANTSE

It has long been known that lumbar puncture in the presence of an intracranial mass may lead to rapid deterioration and death. Despite this, inappropriate lumbar punctures are still performed. We present two cases in which this occurred and discuss the lesson that may be learnt from them.

Case 1

A 17 year old previously healthy youth went drinking one evening, saying on arrival home in the early hours of the morning that he had drunk 9 pints (5 l) of beer and eaten a Chinese meal. He mentioned that he had fallen over but apart from being drunk he was thought to be well and was put to bed. That morning he slept in, but when his parents came to rouse him in the afternoon he was very drowsy, though rousable, and mumbled incoherently on vigorous shaking. His general practitioner was called and arranged admission to hospital.

On arrival at the local general hospital his level of consciousness fluctuated between drowsy but rousable and completely unrousable. Temperature was 37.5°C and he had a maculopapular rash extending from face to trunk. There was mild neck stiffness but no focal neurological signs: in particular, there was no papilloedema. The history that he had fallen was not elicited. A full blood count showed a peripheral leucocytosis of $22.5 \times 10^9/l$. The drowsiness associated with neck stiffness, maculopapular rash, and a

Papilloedema may be absent despite the presence of an intracranial mass lesion; hence any patient who presents with increasing drowsiness and a stiff neck and for whom doubt exists about the safety of lumbar puncture should first be examined by CT.

peripheral leucocytosis led to the diagnosis of meningococcal meningitis.

At lumbar puncture clear fluid at a pressure of 23 cm water was obtained. Within 15 minutes of the procedure both pupils became fixed and dilated and the patient had a respiratory arrest. He was intubated and ventilated immediately, given 50 g mannitol, and a skull radiograph showed a right frontal fracture. He was rapidly transferred to the regional neurosurgical unit.

On admission brain stem reflexes were absent. A CT scan showed a large right frontal extradural haematoma with considerable mass effect. Though the prognosis was thought to be poor, the clot was removed by craniotomy. Next day the criteria for brain stem death were fulfilled and ventilation discontinued.

Case 2

A 49 year old hypertensive man became acutely dizzy, then dysarthric, and vomited copiously. He was admitted to a general hospital and complained of headache. He was drowsy but able to speak and showed no focal neurological signs. Over the next 12 hours he became more drowsy and was found to have a stiff neck. There were no focal neurological signs and no papilloedema.

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Lumbar puncture yielded uniformly bloodstained fluid under pressure. Over the next three hours his level of consciousness deteriorated to unrousable and he required ventilation. A CT scan then showed a large haematoma in the vermis cerebelli. He was transferred to neurosurgical care and the haematoma evacuated. He showed no signs of recovery and died 11 days after operation.

Discussion

In the 90 years that lumbar puncture has been used clinically there have been regular reports of the dangers of lumbar puncture in the presence of supratentorial and infratentorial mass lesions.^{1,5} All these reports emphasise that it should not be performed if there is a history of worsening headache, alteration in the level of consciousness, focal neurological signs, or papilloedema. It is widely taught that a lumbar puncture should not be done if there is papilloedema, but few are aware of the importance of the other features. Papilloedema is not a reliable indicator of raised intracranial pressure, particularly in the acute phase, and in both of our patients papilloedema was specifically noted to be absent despite the presence of intracranial mass lesions.

Duffy reviewed 30 cases of neurological deterioration occurring after lumbar puncture.⁴ Half the patients deteriorated immediately after their lumbar puncture and half within 12 hours. Twenty three patients were found to have supratentorial mass lesions and seven infratentorial mass lesions. In 18 cases there was a history of either personality change or increasing drowsiness, yet only nine patients (30%) had papilloedema. Twelve (40%) of the patients died. In our two cases the patients had a clearly reduced level of consciousness but no focal signs and no papilloedema. In both the lumbar puncture was performed to exclude meningitis on the basis of a stiff neck. Tonsillar herniation due to raised intracranial pressure may lead to neck stiffness which may be confused with meningism due to meningitis or subarachnoid haemorrhage.⁶

Undoubtedly had CT been performed before lumbar puncture the intracranial mass lesions would have been found and lumbar puncture avoided. In neither case, however, was there immediate access to CT, though in the first case a regional neurosurgical unit offering a 24 hour scanning service was only four miles (6 km) away.

In the second case a CT scanner was on site but was not available out of working hours.

Removal of an extradural haematoma before the development of brain stem compression carries a good prognosis for full recovery,⁷ while removal of a cerebellar haematoma in a patient who is still conscious also carries a good prognosis.⁸ It may be argued that had this been meningococcal septicaemia the delay in instituting treatment before obtaining a CT scan might have been deleterious. Nevertheless, in the presence of a reduced level of consciousness or other signs of an intracranial mass lesion it is probably safer to begin intravenous benzylpenicillin after blood cultures have been taken when meningococcal septicaemia is strongly suspected. A lumbar puncture can then be performed after urgent CT to exclude a mass lesion.

These two patients show clearly the risks of lumbar puncture in any patient who has a diminished level of consciousness. With CT now widely available throughout Britain there should be no indication for lumbar puncture in patients who have a reduced level of consciousness, a history of worsening headache, focal neurological signs, or papilloedema without first obtaining a CT scan. Doctors in district general hospitals should think twice whenever they consider performing a lumbar puncture, and doctors who control access to CT scanners should relax their policy and allow any patient for whom doubt exists about the safety of a lumbar puncture to be scanned before performing this dangerous test.

References

- 1 Meyer A. Herniation of the brain. *Archives of Neurology and Psychiatry* 1920;4:387.
- 2 Jefferson G. The tentorial pressure cone. *Archives of Neurology and Psychiatry* 1938;40:855-76.
- 3 Lubie LG, Marotta JT. Brain tumor and lumbar puncture. *Archives of Neurology and Psychiatry* 1954;72:568-72.
- 4 Duffy DP. Lumbar puncture in the presence of raised intracranial pressure. *Br Med J* 1969;i:407-9.
- 5 Pettito F, Plum F. Lumbar puncture. *N Engl J Med* 1974;290:225-6.
- 6 Jennett WB. *An introduction to neurosurgery*. 2nd ed. London: William Heinemann, 1970:52.
- 7 McKissock W, Taylor JC, Bloom WH, et al. Extradural haematoma. Observations on 125 cases. *Lancet* 1960;iii:167-72.
- 8 Allen MB Jr, Yaghman F, El Gammal T. Spontaneous intracranial and intracerebellar hemorrhage. In: Youmans JR, ed. *Neurological surgery*. Philadelphia: W B Saunders Co, 1982:1821-49.

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CLINICAL CURIO

A blade of grass

Ten years ago, on a bright Saturday morning, I went to the Beach Candy swimming pool in Bombay with my children and the 7 year old daughter of my friends, an Indo-European couple who had lived locally for some years before migrating to Europe and were now visiting us. While we were sitting on the lawn I noticed a well defined, erythematous dry patch on the upper arm of my friends' daughter. Its margin was slightly raised above the surrounding skin.

As lupus vulgaris and chronic cutaneous leishmaniasis are rare in the Bombay region the diagnosis of tuberculoid leprosy immediately came to mind. Although I used to see 25-30 cases of leprosy daily, this time the thought of such a diagnosis made me uneasy. As neither cotton wool nor a piece of thread was at hand I plucked a blade of grass and gently stroked the lesion while she was engrossed in a picture book. As soon as the grass touched the normal skin she exclaimed, "Uncle, why are you tickling me?" Even according to this crude test it was a clear case of tuberculoid leprosy. The tuberculoid form of leprosy is the commonest type of leprosy encountered in Africa and India and carries a good prognosis. About 150 years ago it was also prevalent in Europe. Indeed, it was a German dermatologist, Jadassohn, who first used the term "tuberculoid" in 1898 for describing a form of leprosy whose histopathological features resembled those of non-caseous tuberculosis.

How to explain to the mother—a medical doctor—that I had diagnosed a major and dreaded disease in her daughter simply by using a blade of grass

whirled through my mind. After lunch, seeing that the children were in another room, I gathered all my courage and cautiously told her that her daughter had a patch that might be due to a benign form of leprosy. She broke into sobs and tears. I did my best to help her through the initial shock and managed to reassure her by explaining that in such cases the prognosis is good provided the treatment is taken regularly.

Eventually she accepted what I had told her, and I heaved a sigh of relief. In those days I was head of the dermatology department, Sir GT Hospital, Grant Medical College, Bombay. The same afternoon I got one of my junior colleagues to perform a sweat function test, which is helpful in diagnosing non-lepromatous cases of leprosy, especially in children. It was no surprise to see that an intradermal injection of 0.1% acetylcholine did not produce sweating on the affected area.

To avoid psychological complications the diagnosis was never disclosed to the patient or to her elder brother and sister. She was told instead that her skin patch was due to a vitamin deficiency, an acceptable alternative as she was known to eat less fruit and vegetables than the rest of her family. She was immediately put on dapsone tablets, which she took regularly for nearly five years, thinking them to be vitamin tablets. Recently she visited us in Basle, Switzerland—a charming, grown up girl. I was happy to see that the lesion of tuberculoid leprosy had completely vanished: the treatment of tuberculoid leprosy is usually one of the most gratifying experiences in medicine.—SHANTARAM J YAWALKAR, Ciba-Geigy Ltd, Basle, Switzerland.