BRIEF REPORTS

NEUROLOGICAL DETERIORATION AFTER CEMENT INJECTION INTO A VERTEBRAL BODY

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Polymethylmethacrylate cement (PMMA) is sometimes used to fill defects created by the removal of neoplastic tissue from the spine. This can improve stability and relieve pain (Usui et al 1988). Vertebral bodies at risk of collapse due to tumour have been injected with uncured PMMA, by a percutaneous route (Kaemmerlen et al 1989) or at open operation via the pedicle or a drill hole in the side of the body.

We report a case in which injection of PMMA into a vertebral body resulted in neurological deterioration.

Case report. A 63-year-old woman known to have breast carcinoma presented with mild paraparesis of Frankel grade D. Plain radiography and CT showed spinal-cord compression due to metastatic collapse of the D12 vertebra. Tumour tissue was also demonstrated in the body of L3, which had not yet collapsed, and appeared to have an intact posterior wall.

At operation by a thoracoabdominal approach, the D12 lesion was resected and reconstructed using bone cement and an AO plate. In addition PMMA cement (Simplex; Howmedica International, London, UK) was injected through a drill hole in the lateral side of the body of L3 in an attempt to prevent collapse.

On recovery from anaesthesia, the patient's neuro-

logical status had deteriorated to Frankel grade B. Postoperative CT scans showed that cement had escaped from the body of L3 into the spinal canal (Figs 1 and 2). We believe that the cement had leaked through an unrecognised defect in the posterior wall of the vertebral body.

Discussion. Cement injection may prevent further collapse, but our case shows that this seemingly straightforward procedure is not without risk. Bone cement cures by an exothermic reaction, and tissue in contact with it may reach temperatures of 40° to 110°C (Berman et al 1984). The threshold temperature for cell injury is time-dependent, but damage may occur after only five seconds at 60°C. Cement within the spinal canal will be close to neural structures; we believe that thermal injury was the cause of the neurological deterioration in our patient.

We suggest that when injection of a vertebral body with bone cement is being considered, the integrity of the posterior vertebral body wall should be confirmed at the time of operation. This could be done by radiography after the injection of a contrast medium into the vertebral body. Preoperative CT scans may not reveal such defects.

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Fig. 1

Fig. 2

Figure 1 – CT scan at L3 level. Cement injected into the vertebral body has leaked into the spinal canal. Figure 2 – CT scan at L2 level. Cement has spread proximally within the spinal canal, and has also tracked laterally into the intervertebral foraminae.

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