Short report

The value of routine CSF analysis during lumbar radiculography for low back pain

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SUMMARY The medical notes of 370 orthopaedic patients with low back pain, who underwent lumbar radiculography, were retrospectively reviewed to determine the effect, if any, that CSF analysis had on their subsequent management. It was found that no apparent alteration of management occurred in a single patient and hence the routine sampling of CSF during lumbar radiculography for uncomplicated low back pain has been discontinued in our department.

The removal of cerebrospinal fluid (CSF) is considered a routine part of any myelographic procedure and is advocated by many of the current British textbooks.¹⁻³ Recent studies elsewhere, however, have begun to question the efficacy of this practice.^{4,5} In view of the increasing financial constraints on the health service we have attempted to assess retrospectively whether CSF sampling is appropriate in the investigation of the patient with low back pain.

Patients and methods

The medical records were reviewed for the laboratory CSF results of 370 patients who had undergone lumbar radiculography between January 1984 and December 1985. All the patients were referred by orthopaedic surgeons with the presenting complaint being either low back pain, sciatica, suspected spinal stenosis or spondylolisthesis. Two specimens of CSF were routinely obtained, one for microscopy and the second for protein estimation.

The case notes were first inspected to see if the two separate report sheets, microscopy and protein, were present or absent, and if present, were they correctly mounted in the notes or loose, that is, tucked in the back of the notes. Secondly, the CSF results were assessed as to whether they fell within the normal accepted laboratory range. The normal protein range was 0.15-0.45 g/l and the normal number of white cells was less than 5. Allowances were made to these

normal ranges in the presence of a bloody tap. Finally the typewritten orthopaedic case notes were reviewed to see whether any comment had been made on the presence or absence of the CSF report sheets, normal or abnormal results and any apparent influence on the patients' subsequent management.

Results

In 16 cases (4.3%) both CSF report sheets were missing from the case notes. In a further 81 cases (22%) one or other of the report sheets was missing.

The table shows the proportion of normal to abnormal CSF results and what note of this was made in the typewritten orthopaedic notes. In none of the 97 cases in which both or one or other of the CSF report sheets were missing was any comment to that effect evident in the case notes.

None of the CSF microscopy results was abnormal. The CSF protein level was mildly elevated in 54 (14.5%) cases most of which had abnormalities in the radiculogram which accounted for the CSF protein elevation. No evidence was found in the case notes to suggest that the CSF protein estimation, whether normal or abnormal, altered management in a single case.

The typing of the CSF results into the orthopaedic notes did not seem to be influenced by the result itself but rather by the zeal of an individual secretary. Of the abnormal protein results 17% (9 out of 54) were typed into the notes, which was a similar proportion to the 16% (41 out of 261) of the normal protein results typed in.

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Table CSF results and apparent action taken

	0	1	2	3	4a	4b	N
Protein	55 (15%)	220 (59.5%)	41 (11%)	45 (12%)	9 (2.5%)	0	370
Microscopy	42 (11%)	274 (74%)	54 (15%)	0	0	0	370

Key to table

0 = Result missing & no comment in orthopaedic notes

1 = Result normal & no comment in orthopaedic notes

2 = Result normal & result typed in orthopaedic notes

3 = Result abnormal & no comment in orthopaedic notes

4a = Result abnormal & result typed in orthopaedic notes but NO apparent resultant action

4b = Result abnormal & result typed in orthopaedic notes with resultant action taken.

Discussion

Our retrospective study of 370 patients with low back pain undergoing lumbar radiculography would suggest that most, if not all, of the routine CSF results were superfluous to the patient's management. Similar conclusions were drawn by Rothfus & Latchaw⁴ and Kuuliala & Göransson⁵ the former study on patients with a more varied referral pattern.

Admittedly, retrospective review of the medical notes (the basis of this study) does almost certainly underestimate the clinical perusal of the CSF results. An abnormally high CSF protein in a patient with an abnormal radiculogram or a normal CSF protein in the presence of a normal radiculogram might seem too obvious to justify written comment. The fact, however, that no mention whatsoever was made in the medical notes of the absence of one or both CSF report sheets in 97 cases would suggest that the perusal of the CSF reports was perfunctory, to say the least. Indeed normal practice in most of the cases was for the patient's subsequent management to be decided well before the CSF reports returned from the laboratories.

An elevated CSF protein may occur in the presence of a spinal tumour for this finding is nonspecific since there is a positive correlation between an elevated CSF protein and a prolapsed intervertebral disc.^{6,7} Conversely, however, a neurological deficit is not always associated with a marked elevation of the CSF protein particularly in lateral disc prolapses.⁸ Obviously surgery is not dependent on the level of the CSF protein and it is therefore of little value in the assessment of the patient with uncomplicated low back pain with or without sciatica.^{4,5}

Similarly CSF microscopy would appear to have no place in the assessment of these patients since not a single abnormal microscopy result was recorded in our series.

The convention of obtaining CSF samples is deep rooted, being universally advocated as part of any myelographic procedure by almost all the current radiological textbooks.¹⁻³

In view of our results and the existing literature^{4,5,9} we have discontinued the practice, as a routine, in our department. We would agree with Rothfus & Latchaw⁴ that CSF sampling should be tailored to the clinical situation and would stress the importance of CSF testing where there is a suspicion of infection, tumour or where a complex neurological picture cannot be explained by the presence of a single disc lesion.

It will be interesting to see if any of the champions of routine CSF testing will feel it necessary to perform diagnostic lumbar punctures as increasing numbers of patients with low back pain are investigated with the less invasive, albeit more expensive, techniques of computed tomography and magnetic resonance.

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