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Prevention of headache after lumbar puncture: questionnaire survey of neurologists and neurosurgeons in United Kingdom:

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The aetiology of headache after lumbar puncture is related to the hole left in the dura after the needle has been withdrawn, which allows the cerebrospinal fluid to leak out of the subarachnoid space. The headache can persist for prolonged periods and predispose to subdural haematomas, which are associated with a high mortality. Tourtellotte showed that this headache could be significantly reduced by using smaller needles.¹ Also, among needles of the same size, those with atraumatic blunt tips are associated with a lower incidence of headache. They produce a smaller hole in the dura by separating rather than cutting the elastic fibres, as occurs with the Quincke tipped needles.²

We carried out a questionnaire survey of departments of neurology and neurosurgery to see if these needles were used in the practice of diagnostic lumbar puncture and to assess how else departments may be trying to prevent headaches after lumbar puncture.

Methods and results

In September 1996 we sent a questionnaire addressed to the "senior registrar" of all (n = 105) departments of neurology and neurosurgery in the United Kingdom, as listed by the Association of British Neurologists and the Society of British Neurological Surgeons. We asked specific questions about the practice in their department of diagnostic lumbar puncture. We sent a repeat questionnaire to non-respondents two months later.

The table shows the results of the survey. Seventy one departments (68%) replied. Most departments performed lumbar puncture with the patients lying on their side. Equal proportions of neurology and neurosurgery departments used the 20 gauge spinal needles (the most commonly used needle in both groups). The Quincke tipped spinal needle was used by over 70% of departments in each specialty, and only about a third of departments in each specialty oriented the bevel of the needle tip to be parallel to the longitudinal axis of the spinal cord. Over 80% of the departments clinicians used bed rest as a prophylactic measure. Neurology departments were more likely than neurosurgery departments to use systemic steroids and epidural blood patch for the treatment of headache after lumbar puncture.

Comment

Although the response relies on one person's impressions of the practice of a whole department, we chose a senior trainee who would probably be exposed to most other members.

Most departments performed lumbar punctures with patients lying on their side, but it is quicker and technically easier with the patient sitting upright. Only about a third of departments used the correct orientation of the bevel of a Quincke tipped needle to the

Results of questionnaires from 71 departments of neurology and neurosurgery. Values are numbers (percentages) of departments unless stated otherwise

Item	Neurological units (n=48)	Neurosurgical units (n=23)	P value
Response rate	48/64 (75)	23/41 (56)	0.04*
Patient position:			
Sitting	1 (2)	0	NS
Lying on side	44 (92)	22 (96)	
Either position	3 (6)	1 (4)	
Smallest needle size used:			
18 gauge	6 (12)	4 (17)	NS
20 gauge	23 (48)	12 (52)	
22 gauge	13 (27)	6 (26)	
24 gauge	2 (4)	0	
Don't know	4 (8)	1 (4)	
Needle type:			
Quincke tip	34 (71)	17 (74)	0.9
Atraumatic tip	7 (15)	3 (13)	
Respondent did not answer question or used both types	7 (15)	3 (13)	
Position of needle tip relative to longitudinal axis of spinal cord:			
Parallel	15 (31)	9 (39)	0.7
Perpendicular	17 (35)	6 (26)	
Not considered	16 (33)	8 (35)	
Mean (range) volume (ml) of cerebrospinal fluid collected	8 (2 to 30)	8 (1 to 20)	0.9
Mean acceptable incidence (%) of headache after lumbar puncture (range)	13 (0 to 100)	17 (5 to 100)	0.97
Prophylactic bed rest after lumbar puncture:			
Not practised	8 (17)	5 (22)	0.8
For 1-6 hours	35 (73)	15 (65)	
For 6-24 hours	5 (10)	3 (13)	
Treatment of headache after lumbar puncture			
Respondent suggested systemic steroids	22 (46)	2 (9)	0.002*
Respondent did not suggest systemic steroids	26 (54)	21 (91)	
Epidural blood patch:			
Considered before 72 hours	4 (8)	3 (13)	0.055
Considered after 72 hours	27 (56)	5 (22)	
No response	11 (23)	9 (39)	
Don't know	6 (12)	6 (26)	

NS=not significant as determined by Fisher's exact probability test.

*With χ^2 test.

dura. Mihic proved that the incidence of headache when a Quincke tipped needle was used was reduced if the bevel of the cutting edge was parallel to the longitudinal dural fibres.³

The frequency of headache after diagnostic lumbar puncture with 20 and 22 gauge Quincke needles in ambulatory patients is 36%.⁴ In our survey both groups thought that an acceptable rate would be less than half this rate, even though they used a similar needle. Atraumatic needles of this gauge can be used just as effectively to obtain fluid samples and manometry readings and would also reduce the incidence of head-

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ache.² Bed rest was commonly practised despite having no value in the prevention of headache.⁵

Treatment of established headache after lumbar puncture includes hydration, analgesics, vasopressin, and caffeine. More invasive techniques include the installation of saline or autologous blood into the epidural space. The latter procedure (epidural blood patching) has a success rate of 90% with only minor short term sequelae. Very few of the departments in our study said that they would consider this option within the first 72 hours, although early use is strongly advocated in anaesthetic circles. This may be because other causes of the headache are more likely or because the patient has a fever, which precludes blood patching. However, epidural blood patching would be considered by a good proportion of neurologists after 72 hours.

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Contributors: MGS and DC initiated the research. MGS participated in the study design, data collection, analysis, interpretation, and writing of the paper and will act as guarantor. GJH participated in data collection, analysis, interpretation, and writing of the paper. DRSJ participated in the study design and the interpretation and, together with DC, edited the paper.

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