THE PREVENTION OF HEADACHE CONSEQUENT UPON DURAL PUNCTURE

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SUMMARY

The administration of an epidural infusion of Hartmann's solution for 24 hours after delivery, in patients who have accidentally received a dural tap, is described. Eleven of sixteen patients so treated had no postpuncture headache; five (two with a double tap) had mild headache lasting for 3 days; and two—one who received a drip for only 18 hours and the other whose drip was not started until 12 hours after delivery—had severe postural headache for 3 days.

The likelihood that a patient whose dura has been punctured will, as a consequence, develop a headache is closely correlated with the dimensions of the hole and hence, usually, with the size of needle which produced it. According to evidence gathered by Bonica (1970), the incidence of headache associated with the use of a 25 or 26 gauge needle is no greater than 1%, that associated with the use of a 24 gauge needle is 3.2–8.0%, and with a 20–22 gauge needle, with a "regular" point, 5–41%. In our own recently reported series (Crawford, 1972) of patients who were inadvertently given a dural tap in the course of an attempted epidural block, the needle size was 18 gauge (external diameter) and the incidence of headache 77.5%. The headache is, as Bonica points out, likely to be more severe in the parturient patient than in the non-obstetric patient, because of the episodes of straining, and the tendency towards dehydration, which characterize labour.

Classically, and in our experience very regularly, the headache starts on the morning of the day following the dural tap, and lasts for 6 days. It increases in severity whilst the patient sits or stands, and can be quite incapacitating. Its accidental occurrence in an obstetric patient, who is otherwise well and is wishing fully to enjoy her new experience, is particularly unfortunate, and can negate much of the pleasure which was associated with the extent of analgesia provided by the epidural block during labour.

It is presumed that the headache is caused by traction on various intracranial tissues consequent upon a low cerebrospinal fluid pressure, and that the prolonged, yet almost invariably finite, period of symptomatology reflects the time taken for the hole in the dura to be repaired and, to a minor extent, for the steady loss of cerebrospinal fluid to be made good.

Until recently, therapy has consisted of: encouraging the patient to lie flat for as much of the time as possible; the administration of copious amounts of fluid by mouth and, in some cases, intravenously, with the objective of increasing intracranial fluid volume; and the prescribing of appropriate analgesics. None of these measures is successful in reducing significantly the incidence of headache, or in alleviating distress to any great degree once the symptom has become established. There have been occasional advocates of the policy of injecting 30–60 ml of normal saline into the epidural space as a method of treating extremely severe headache. We have tried this form of therapy on occasions, but agree with Bonica (1970) that the relief provided is only temporary—when given as a prophylactic measure it has succeeded only in delaying the onset of headache by one or two days.

During the past few months we have adopted a suggestion of Moir (1971), and the high degree of success of this has been such that we feel, despite the small number of cases yet so treated, it is worthwhile presenting our results.

REGIMEN

If, in the course of initiating an epidural block for obstetric analgesia, the dura is punctured, the anaesthetist inserts the catheter through an adjacent interspace and analgesia for labour is maintained using 0.5% bupivacaine for top-up doses, to ensure...
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as had been planned. Effort is made, however, by using 0.5 per cent bupivacaine for top-up doses, to ensure that the patient does not bear down during the second stage and is electively delivered with the aid of forceps. In addition, after the epidural catheter has been inserted, a litre of Hartmann’s solution is administered intravenously over the course of 2–3 hours in order to promote tissue hydration.

Immediately subsequent to delivery an epidural infusion of Hartmann’s solution is started. The drip is run into the epidural catheter via the Swinnex Millipore filter which had been in use during labour. The rate of infusion has varied, but we attempt to maintain a drip rate of approximately 10–15/min, and it is continued for 24 hours. During this period the patient is nursed lying flat—with head pillows—but is allowed to sit up in order to take her meals and to drink. The patient is kept in the intensive care section of our main delivery suite throughout this time. At the end of the 24 hours the epidural catheter is removed and the mother transferred to her allotted ward. Subsequently no special treatment is provided, except that care is taken to ensure that she does not require to strain at stool.

RESULTS

Eighteen patients have received an epidural drip after delivery. Eleven of these had absolutely no headache as a result of the dural puncture. Two patients developed a classical postspinal headache, but neither had been given the appropriate prophylactic regimen: one patient, in whom the epidural drip was, by mistake, maintained for only 18 hours, developed a severe postural headache on the third postnatal day, and this persisted for 3 days; the drip was not started on the second patient until 12 hours after delivery and her headache developed on the third day and cleared on the seventh. Five patients, who received the appropriate treatment, complained of a relatively mild headache (described usually as “heaviness” or “fuzziness”) which started on the second or third postnatal day and persisted for 3 days: two of these patients had had a double tap (one with a needle, the second with a catheter).

The total volume of Hartmann’s solution infused was 1.0–1.5 litre.

One ill effect for which we cannot account was remarked upon by several of the patients: this consisted of a sharp pain between the scapulae and on occasion in the back of the neck (not associated with stiffness) during the infusion, and intermittently during the succeeding 3–4 days.

DISCUSSION

Only five of the sixteen patients who received the advised 24-hour regimen developed a postpuncture headache, and even in these cases the symptom was remarkably mild. It seems likely that the striking success of this form of therapy is due in part at least to the maintenance of pressure equilibrium across the site of puncture. We postulate that the consequent prevention, or retardation, of slow seepage of cerebrospinal fluid through the hole permits a much more rapid healing of the wound than can occur in the untreated case. We initially chose to provide an epidural drip for 24 hours on purely arbitrary grounds. It would be both foolish and unfair to attempt to define more closely the minimum duration of infusion required to ensure adequate prophylaxis, but it is interesting to note that a period of 18 hours proved to be insufficient in one case. Our experience of the patients who had a double tap suggests that this mishap might better be treated with a 36-hour infusion.

Although the occurrence of an accidental dural puncture during an attempted epidural block continues to be a matter of concern to us, the introduction of this form of therapy has undoubtedly relieved both the patient and ourselves of much of the previously-associated distress. Perhaps a place might be found for the use of an epidural drip in the prophylactic treatment of postdural puncture headache associated with events in other fields of anaesthesia, neurosurgery and radiology.

REFERENCES


LA PREVENTION DE LA CEPHALEE CONSECUTIVE A LA PONCTION DURALE

SOMMAIRE

On décrit l’administration d’une infusion épurale de solution de Hartmann durant 24 heures après accouchement chez des patientes chez qui une ponction durale a eu lieu accidentellement. Onze des seize patientes traitées ainsi n’ont pas eu de céphalées après ponction; cinq (deux avec double ponction) ont eu des lésions maux de tête durant 3 jours; et deux ont eu des céphalées posturales sévères durant trois jours; une patiente n’a reçu l’infusion que durant 18 heures et chez la seconde l’infusion n’avait débuté que 12 heures après l’accouchement.
Die Verhütung von Kopfschmerzen nach Verletzung der Dura
Zusammenfassung
Es wird die Anwendung einer epiduralen Infusion mit Hartmann's Lösung für eine Dauer von 24 Stunden nach der Einlieferung bei Patienten beschrieben, die bei einem Unfall eine Dura-Verletzung erlitten haben. 11 von 16 Patienten, die so behandelt wurden, hatten nach der Verletzung keine Kopfschmerzen. 5 Patienten (2 mit doppelter Verletzung) hatten drei Tage lang leichte Kopfschmerzen; 2 Patienten—einer hatte 18 Stunden eine Infusion und der andere erhielt die Infusion erst 12 Stunden nach der Einlieferung—hatten drei Tage lang starke lageabhängige Kopfschmerzen.

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Book Review

The Symposium was held under the auspices of the Obstetric Anaesthetists' Association at Kingston Hospital in March, 1971; over 160 anaesthetists and obstetricians from Great Britain and Northern Ireland were present. Dr J. Selwyn Crawford gives the general tone in the foreword when he says that "This was a Symposium of working people describing their own observations made in the context of clinical experience."

Epidural analgesia is one of the few growth points left in anaesthesia today. The position of pain clinics, intensive therapy units and anaesthetic outpatients seems now more or less stable; few people would deny the utility of such institutions, nor the value of the anaesthetist's contribution to them. The move to set up services to provide epidural analgesia for women in labour, however, is a wine of more recent vintage, and is still in ferment. It was largely, no doubt, as a result of the last World Congress of Anaesthetists held in London in 1968 that epidural analgesia for women in labour has become a subject of such importance, and it was perhaps this meeting which was the most important single factor in kindling enthusiasm in the United Kingdom.

But though anaesthetists may attempt to set up comprehensive epidural services in midwifery it is the D.H.S.S. which ultimately dispenses the necessary cash, directed to some extent by public opinion to which it tends to be sensitive. Medical priorities are always a fascinating subject and it would have been interesting had this Symposium contained a fuller discussion as to the economic consequences of attempting to implement a comprehensive epidural service to mothers in labour in the United Kingdom. Unfortunately in this context money counts, and there is always a tendency to rob Peter to pay Paul.

Unfortunately, too, obstetricians and midwives have sometimes shown themselves less eager than they might be to embrace the new ideas. The relief of pain in labour has never been as prominent in their thoughts as perhaps it should be, and the limitations of conventional obstetric analgesia are usually too easily glossed over. Indeed one detects here and there in this Symposium a slight tinge of exasperation that epidural services should not be held in higher esteem. One can take the horse to the water, of course, but one cannot make it drink; sometimes it is more dignified to wait until it gets thirsty than to throw the water in its face.

As the Symposium was composed mainly of a group of workers active in the field of epidural analgesia in midwifery it is not surprising that overt enthusiasm was not entirely eschewed. It would, one fancies, have been a brave man who had mistakenly at this gathering got up and shouted that epidural analgesia was all bunk; one could only pray that his end would be mercifully swift. Nevertheless the complications of the technique were faithfully and fully recorded and discussed in four lively and useful sections.

The contributions were inevitably somewhat uneven. Some presented the results of recent research and some went over relatively old ground. Thus there was a presentation of work on the effect of continuous lumbar epidural block on maternal and foetal acid base balance during labour and at delivery (as slightly more contentious contribution than most) and a paper on plasma concentrations of local analgesic drugs. Side by side with this one finds that the discussion ranges on details of technique such as the question of the re-autoclaving of Millipore filters.

Taken all in all, however, it is difficult not to be enthusiastic about this production, which must be invaluable for those active in this field. It shows a group of working clinical anaesthetists and obstetricians talking about real clinical problems on a subject of great topical importance. If the Obstetric Anaesthetists’ Association can, from time to time, produce contributions of the same interest as this they must have little to fear, and will amply have justified their existence.

J. E. Uttin