MECHANISM OF ACTION OF EXTRADURAL COMPARED WITH INTRATHecal OPIATES

Sir,—It is not surprising that postoperative analgesia can be obtained by using 0.2 mg of intrathecal morphine (Kalso, 1983). What is surprising is that this was not as effective as 0.4 mg. It has been shown that the peak cerebrospinal fluid concentration after intrathecal injection of morphine 1 mg is far in excess of the peak cerebrospinal fluid concentration of morphine 8 mg given extradurally (Jorgensen, Anderson and Enquist, 1981). If one can extrapolate from these results, then 0.2 mg would be expected to have a peak cerebrospinal fluid concentration as great as or greater than extradural morphine 8 mg.

No studies have as yet been published to show what intrathecal dose is equianalgesic with that used extradurally. Morphine 8 mg given extradurally has been shown to be highly effective, and is actually four times the minimal effective dose (Martin et al., 1982).

Thus, it would appear that extradural opiates, unlike intrathecal opiates, produce analgesia by an action that is not confined totally to the spinal cord itself. It is probable that extradural opiates also produce analgesia by acting, first, on the dorsal roots which are rich in opiate receptors (Fields et al., 1980), and, second, on supraspinal sites following the diffusion of the morphine into the extradural venous plexus, which then reaches the brain, either via a direct communication of the plexus with the cerebral vessels or via the general circulation. It seems, therefore, that although only relatively small amounts of morphine are able to cross the dura into the cerebrospinal fluid after extradural application, the effectiveness of this method is enhanced by the multiple sites at which the morphine acts.

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Sir,—Dr. Glass quite logically wonders why morphine 0.2 mg was not as effective as 0.4 mg given intrathecally for postoperative analgesia in orthopaedic patients (Kalso, 1983). Even 0.2 mg should produce a much higher CSF concentration than, for example, 8 mg given extradurally (which should be four times the minimal effective dose of extradural morphine). In the study by Jorgensen, Andersen and Enquist (1981) extradural morphine 8 mg caused a CSF concentration of 3.2—3.9 t9g/ml at 2 h from the injection, whereas the immediate (2-min) concentration after 1 mg of intrathecal morphine was many times higher (62—67 pg/ml). After 10 min the concentration had already decreased to 40—56 pg/ml. According to Venturfridda, Figliuzzi and Tamburini (1979), the CSF concentration after 1 mg of i.t. morphine diminished rather quickly: at 30 min it was 4—8 pg/ml and at 6 h only 0.3—1 pg/ml. This could explain why, in my study, four of 10 patients who had received 0.2 mg of i.t. morphine needed i.m. opiates within 6—12 h from the injection (Kalso, 1983). The threshold dose of i.t. morphine for postoperative analgesia in adults seems to be 0.3—0.4 mg, as only six of 23 patients needed analgesics within 24 h after operation after a dose of 0.3 mg (Löfström, Merits, and Bengtsson, 1983) and five of 20 after 0.4 mg, while with 0.2 mg as many as seven of 10 orthopaedic patients needed additional analgesics within this period. Finally, whether the morphine concentration of the CSF, sampled at the lumbar level, has any relevance to the prolonged spinal effect of intrathecal or extradural morphine remains unanswered.

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TRANSSACRAL NEUROTOMIC NERVE BLOCKADE

Sir,—The recent report by Robertson (1983) prompts me to draw attention to the use of transsacral nerve block (in this case S3) for the treatment of urinary incontinence caused by detrusor muscle instability. The technique used is essentially the same as that described by this author except that phenol was only used in patients with multiple sclerosis. Otherwise, 0.5% bupivacaine 2 ml and depomedrone 20 mg were injected on each side (Eisenhight and Ryan, 1982). Blockade of the S4 nerve will affect the external urethral sphincter (Torrens and Griffith, 1974), so it is interesting to note that no urinary problems occurred.

All patients undergoing S3 block were evaluated with a cystometrogram (CMG), with the exception of the miscellaneous group, and the preliminary results (table I) are promising. To date I have had three spinal taps (with one spinal headache treated successfully with an extradural patch), three "bloody" taps and three "bloody" taps and one patient fainted. Attention is currently being directed to correlating the clinical result with post-block CMG studies.

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