PRE-EMPTIVE ANALGESIA

Sir,—We wish to comment on the article by Dahl and colleagues [1], who investigated the effects on postoperative pain and analgesic requirements of starting a 72-h continuous infusion of extradural bupivacaine and morphine either before surgical incision or immediately after surgery. The results showed that the two main outcome measures did not differ significantly between the preincisional and the postincisional groups.

We congratulate the authors on their continuing work aimed at reducing postoperative pain [1-3]. Their pioneering studies are a welcome addition to clinical practice. Dahl has demonstrated that timely preventive measures in combination with aggressive postoperative treatment can reduce postoperative pain significantly, to near zero levels. The results of these studies raise the possibility that “painless surgery” may soon become a reality.

Animal studies by Woof and Wall [4] and others have led to the idea thatnoxious intraoperative events (surgical incision, wound retraction) may contribute to postoperative pain long after surgery if, at the time of surgical trauma, primary (or visceral) afferent fibres are capable of transmitting their message centrally, and spinal cord cells receive the “afferent barrage” signalling the presence of injury. It has been hypothesized that one effect of the afferent barrage is to alter central processing so that, after surgery, inputs from the wound impinge on sensitized spinal cord cells which amplify the peripheral signal and contribute to enhanced postoperative pain. The implication is that postoperative pain can be reduced by pre-emptive analgesia [5] which would prevent the development of central sensitization, and Dahl and colleagues have tested this hypothesis by comparing treatments administered before incision or after surgery.

One issue concerns the potential pre-emptive effects of systemic opioids [6,7]. The possibility cannot be excluded that the pre-emptive administration of fentanyl 0.1-0.2 mg to patients in both preincisional and postincisional groups at induction may have attenuated the afferent barrage and contributed to non-significant intergroup differences in postoperative pain. The minimum effective dose of preoperatively administered systemic opioids that significantly attenuates or prevents the central consequences of noxious perioperative events is not known. However, we do know from animal studies [4] that the dose of systemic morphine required to abolish established noxious stimulus-induced central hyperactivity is an order of magnitude greater than the dose required to prevent it. Until this has been established in clinical studies of pre-emptive analgesia, opioid administration as one component of the general anaesthetic procedure will confound the main outcome measures that are assessed.

Moreover, in the study by Dahl and colleagues [1], the time between induction and skin incision may have differed for the groups. It is clear that 40 min elapsed between induction and skin incision in the group that received the extradural block before incision, but it is not clear from the methodology if the onset of surgery also occurred 40 min after induction in the other group. If not, the effects of the induction dose of fentanyl on postoperative pain could have been different in the two groups of patients. A second related issue concerns the timing of the test dose of bupivacaine (2 ml of 0.75%) relative to incision in the extradural regimen relative to skin incision is not of “major clinical importance” must be evaluated with the knowledge that, in the control group, the combined effects of the induction dose of fentanyl and the extradural test dose of bupivacaine may have attenuated the surgery-induced afferent barrage. We would also caution readers about overgeneralizing the results to other anaesthetic procedures. Pre-incisional administration of analgesics may be more effective than postincisional (or postoperative) administration for certain combinations of analgesic agents, routes of administration and types of surgery [8,9].

J. KATZ
B. F. KAVANAGH
M. CLAIBOUX
A. N. SANDLER
The Toronto Hospital
Toronto, Canada