Clinical Reports

The use of cervical epidural nerve blocks in the management of chronic head and neck pain

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Cervical epidural blocks were used as part of a comprehensive multimodal treatment programme for patients with chronic benign pain in the head and neck. Forty-five patients had 141 blocks without major complications. The indications and role of blocks in pain management are discussed.

Key words
ANAESTHETIC TECHNIQUES: cervical epidural, PAIN: chronic, multimodal treatment.

In the early part of this century, epidural injections were used in the treatment of sciatica.[1] Dogliotti[2] extended the use of nerve blocks to the control of cancer pain and by the early 1950s, Alexander[3] and Bonica[4] were systematically using epidural and other injections in a clinical setting for the relief of all types of pain. Since that time, the understanding and management of chronic pain has progressed greatly.[5] It is now understood to involve intricate relationships between medical, social and psychological aspects of the whole individual. Today, it is accepted that many other modalities, besides nerve blocks, have a role in the management of these complex problems.[6–9] However, within this broadened treatment approach, nerve blocks remain a major diagnostic and therapeutic tool in the treatment of patients with chronic pain. Chronic pain in the upper back, neck, head and arm can be alleviated, at least temporarily, by epidural block at the cervical level, in the same way that thoracic and lumbar epidural blocks have been used. We have applied this technique to pain in this region and believe that it would be informative to report on our use of cervical epidural nerve blocks since a large series of this procedure has not been previously reported.

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Methods

A retrospective analysis was undertaken of all cervical epidural nerve blocks done in the Pain Management Unit (PMU) of the Royal Victoria Hospital between November 1981 and October 1982. Information was extracted on the total number of blocks administered, patient characteristics and available data on the outcome of treatment. Statistics were then calculated.

Patients

Cervical epidural blocks were administered to 45 patients during this peiod. The mean age of the patients was 46.2 years (SD = 10.3 years, range = 54 years: 18–72). Females were significantly older ($p < 0.05$) ($\bar{x}$ = 50.1 years; SD = 7.3; N = 23) than males ($\bar{x}$ = 42.3 years; SD = 12.8; N = 22) with near equal numbers of each sex represented. All patients were referred to the unit by physicians working either within the hospital or in the com-

munity. The patients had suffered from chronic pain for six months or longer and it was not due to malignancy. All had undergone appropriate medical investigation with unremarkable results and were considered failures of other medical or surgical treatments. All patients were felt to have conditions which might be amenable to treatment by nerve blocks.

Typical diagnoses in our patients were muscle-contraction, head and/or neck pain, although they were often referred as having one of the various classifications of headache and migrainous pain or cervical disc disease (Table I).

Finally, all patients were accepted on an outpatient basis and received the entire multimodal treatment approach[7,10] while being seen at the PMU.

Procedure

The procedure follows, very closely, that described by Bromage.[11] Patients were made to sit over the edge of a bed with feet supported on a stool, and flexed over a pillow placed on the lap. After skin preparation with Hibitane 1:200 in alcohol and sterile draping, the skin, subcutaneous tissues and ligaments on either side of the interspinous ligament were infiltrated with about 5 ml lidocaine 1.5 per cent plain. To allay anxiety and diminish the risk of fainting, each step was explained during the procedure and the patient was encouraged to relax by deep breathing.

While awaiting onset of skin analgesia, the equipment was prepared. A hole was made in the skin in the midline and a 16 gauge Tuohy needle inserted, usually at the C6-7 interspace, although occasionally one interspace above or below. The needle was filled with saline and the hub was gripped between thumb and forefinger of each hand with the little and ring fingers resting on the patient's shoulders. The needle was steadily advanced until the meniscus of the drop moved. Although this is a very reliable indication of epidural space entry, it was always confirmed by loss of resistance to air. Two millilitres of lidocaine were injected and a catheter inserted cephalad about 4 cm. The patient was warned about possible paraesthesias. The catheter was secured and the patient was placed completely flat to permit the local anaesthetic to flow to the upper cervical roots. The initial dose was usually 7 ml of lidocaine 1.5 per cent plain, except very small patients or when the patient had previously felt like fainting. In the latter instance, the full dose was not injected until the blood pressure had stabilized. After 10 minutes in the supine position, the patient was raised to the reclining position and encouraged to move their head and neck.

TABLE I Patients' diagnoses

Diagnosis	*N*
Muscle contraction-tension head/neck pain	38
Trauma to cervical spine with tension neck pain	2
Cervical osteoarthritis with tension neck pain	1
Trauma to soft tissue with tension neck pain	1
Torticollis with tension neck pain	2
Pinched/compressed nerve	1

An additional dose of 3 ml was given one hour later, and the catheter removed and inspected. One half hour later, the patient sat in a chair, and if stable and comfortable, he was allowed to go home, accompanied. The block was repeated in seven to ten days.

Results

One hundred and forty-one cervical epidural nerve blocks were done during this twelve-month period. Sixteen patients were given only one block and in calculating the mean number of blocks per patient, this group was eliminated from the totals. Thus, the corrected mean number of blocks per patient was 4.4. Nine of these 16 patients were compensation cases or welfare recipients who refused further treatment; five went on to other types of blocks; one was psychotic and the other was found to have pneumonia.

All patients had some degree of analgesia and most obtained good pain relief but the extent was variable. Motor nerve block as indicated by diminution of hand grip force was rarely affected. Sometimes, despite an adequate nerve block, the pain persisted unchanged. It was thought that this indicated a more central origin of the pain, for instance psychological. Apart from their normal initial anxiety, the patients found the procedure quite acceptable.

It was observed that the insertion of the epidural catheter produced transient paraesthesia in approximately one third of the patients. There was only one

incident of respiratory insufficiency, which occurred in a patient with generalized carcinoma and pneumonia. Hypotension, requiring fluid infusion and a vasopressor, occurred in six patients who recovered without further complication. There was no incidence of dural puncture. Unilateral block occurred from time to time but this was not systematically documented.[12] There were no other complications and no long-term adverse effects were observed resulting from the blocks. (Since this study a further 91 epidurals have been done.)

Discussion

This report describes the use of cervical epidural blocks at the PMU. Since this was a retrospective study, we were unable to consider the efficacy or outcome of the procedure as a therapeutic modality. Furthermore, it is difficult to isolate therapeutic effects of a single treatment intervention in a programme where efficacy is based upon the concurrent use of some six to eight specific treatment modalities. Results with this overall program have been reported elsewhere.[13] In that study, 60 per cent of patients were returned to work.

It cannot be stressed too much that the block should be used within the context of an holistic comprehensive programme and that attempts to employ this procedure as a single treatment modality indicate a complete failure to comprehend the complex nature of chronic pain problems. In the light of the overwhelming evidence attesting to the multifaceted nature of chronic pain, the present-day use of any treatment as the single modality cannot be defended.

Nerve blocks help establish a diagnosis regrading the origin of pain. For example, pain of a peripheral origin (up to the point of block) will generally be alleviated by blocks, whereas pain of a more central origin, as with spinal cord or psychological problems, will tend not to be as effectively relieved. Nevertheless, nerve blocking does generally provide a temporary period of pain relief during which time mild physiological manipulation may be done of the joints, tendons and muscles involved. This period of pain relief diminishes the vicious circle effect of pain which creates anxiety, which itself results in muscle tension leading to more pain, etc. Since actual muscle spasm is rare in these patients, except in cases of torticollis, it is presumably the relief of pain which allows stretching and movement of muscles. Lidocaine 1.5 per cent plain gives necessary analgesia for an adequate period of time without interference in muscle function.

As well, the awareness and mastery by the patient of the anxiety associated with the actual frightening experience of having a block has become an important therapeutic tool at the PMU. The block situation is a useful model as an inducer of stress, a model within which patients can learn, in a controlled setting, to recognize their reactions and feelings to anxiety provoking events and consequently they can be helped to develop effective coping strategies. This aspect of nerve blocks is most beneficial to patients in whom anxiety and related tension are important factors in the etiology of their pain.

The period of complete abolition of pain makes the patient aware that the problem is not confined solely to the pain they feel in their muscles, but that there are also underlying problems of anxiety, etc. They become aware of the underlying problems because these anxieties do persist, despite the abolition of the physical feelings of pain. This awareness might be an important aid to the ongoing concurrent psychotherapy which is used to deal with the psychological aspects of the pain.

We are not aware of any previous reports describing such a large number of cervical epidural blocks. Several comments relating to technique are important: puncture can be made at any level of the cervical spine but C6-7 or C7-T1 are the most convenient, midline insertion is always possible and desirable since the hanging drop method requires a slow steady advance of the needle. The lateral approach requires "walking" the needle across the lamina which causes severe disturbance of the drop. In the cervical region, but much less in the thoracic region, the hanging drop is an exquisitely sensitive indication of epidural space entry. So much so that it is often not possible to pass the catheter through the needle without further advancing the needle. False positives are quite frequent, especially if the needle is deviated or pulled back. Thus all apparent entries must be confirmed by loss of resistance to air. Although false negatives are quite rare, it is essential to maintain a high degree of "feel" and to test with air whenever entry is felt or suspected. Thus the requirements for insertion are considerable force applied by the fingers, at a very slow rate with the

ability to prevent sudden forward movement, and a good sense of position and feel of the needle tip. We suggest the cervical epidural block is a safe procedure and could be considered by other pain units as an additional treatment modality.

References

1 *Ou WO.* Results of treatment in forty-eight cases of sciatica. Ann Surg 1922; 7: 272–6.

2 *Dogliotti AM.* Traitement des syndromes douloureux de la périphérie par l'alcoolisation subarachnoidienne. Press Med 1931; 67: 11.

3 *Alexander FAD.* The control of pain. In Hale D, Ed. Anesthesiology Chap. 28. Davis FA, Philadelphia (1954).

4 *Bonica JJ.* Management of intractable pain with analgesic blocks. JAMA 1952; 1581–6.

5 *Bonica JJ.* Editorial. Advances in research and therapy, Vol. 5: 1–36. Raven Press, N.Y. (1983).

6 *Finer B.* Treatment in an interdisciplinary pain clinic. In Barber J, Adrian C, Eds. Psychological Approaches to the Management of Pain Chap. 11. Brunner/Mazel, N.Y. (1982).

7 *Catchlove RFH.* Organisation d'une unité hospitalière de traitement de la douleur. La Douleur, 42ième Congrès Français de Médecine, Liège, France. Pp 103–14 (1979).

8 *Bonica JJ, Black RG.* Organization and function of a pain clinic. In Swerdlow M, Ed. Relief of Intractable Pain, Excerpta Medica 148–75. Amsterdam (1974).

9 *Swerdlow M.* The Pain Clinic. Br J Clin Pract 1972; 26: 403–7.

10 *Ramsay RA, Catchlove RFH.* An integrated model for the management of chronic pain. Pain 1978; 1: 288. Abstracts.

11 *Bromage PR.* Epidural Analgesia. W.B. Saunders Company, Philadelphia (1978).

12 *Catchlove RFH, Germain M.* Clinical report: Unilateral cervical epidural. Anesthesiology, In Press.

13 *Catchlove RFH, Cohen K.* Effects of a directive return to work approach in the treatment of Workmen's Compensation patients with chronic pain. Pain 1982; 14: 181–91.

Résumé

On a utilisé des épidurales cervicales à l'intérieur d'un plan de traitement global pour des patients présentant des douleurs chroniques de la tête et du cou. Quarante-cinq patients ont eu 141 blocs sans complication majeure. On discute du rôle et de l'indication des blocs nerveux dans le contrôle de la douleur.