Epidural Medication for Relief of Low Back Pain

A Clinical Study

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On a sunny day in Africa 10 million years ago, give or take a few million, Mr. and Mrs. Ramapithecus and their children were out foraging for food. Like their primate cousins in the forest, they usually swung gracefully from limb to limb searching out nuts, fruits and berries. But this day was different. A fierce rainstorm had knocked all their favourites off the branches, and the Ramus, alas, were forced to descend from the trees to find something to eat.

Moving awkwardly on all fours, knuckles bent, they were ungainly creatures on the ground and also extremely vulnerable. Barely 3 ft. high, unable to see over the tall grass, Ramu suddenly found himself and his brood confronted by a snarling saber-toothed tiger. What to do?

The forest was too far off to dash to safety. So, in an inspired gesture, Ramapithecus reached for a rock with both forefeet, reared back on his hind legs and heaved the stone at the predator. Started to see this usually four-footed prey erect, the tiger cautiously retreated. But the apeman's triumph was costly. Unaccustomed to the abrupt, unright position, he was left doubled over in agony with a piercing pain in his lower back. (Time-Magazine, Cover Story, That Aching Back, p.30, 14 July, 1980).

Low back pain in a universal affliction. The cost of treatment, payments for litigation, compensation, quackery, and lost man hours render it also a significant burden to the economy and a major health concern worldwide. In terms of human suffering from chronic pain the cost is incalculable'. It has been shown that chronic pain and its intensity correlate well with high indices of psychological depression. A great number of treatment modalities such as transcutaneous nerve stimulation (TNS), acupuncture, biofeedback, psychotherapy, surgery, drugs, and epidural medication are currently used for the alleviation of low back pain. It has been demonstrated tht intrathecal administration of narcotics would suppress a variety of responses to pain in cats and monkeys[3].

Since then, the clincial application of both intrathecal[4] and epidural[5] morphine for treatment of different pain conditions in man has been reported. Also, epidural administration of different narcotics has been evaluated[6]. The Continuous epidural technique would seem to have particular advantages over intrathecal administration in the treatment of chronic pain in that it permits initial titration of the effective dose, incremental doses, and prolonged medication[7].

Experimental observations indicate that the epidural opiate analgesia is produced by a specific opiate receptor interaction rather than a non-specific axonal blockade[8]. This study was designed to evaluate the efficacy of 2mg morphine together with 5ml 0.25% bupivacaine administered epidurally in relieving low back pain.

Patients and Methods

A total of 34 male patients, physical status ASA I, gave informed consent after the procedure was explained in details. Table I summarizes the patients' data. All of our patients complained of low back pain and all have been on intermittent rehabilitation and drug therapy with mild analgesics. None of them had a past history of drug allergy. *Table 1* An epidural catheter was introduced at the L_2 - L_3 or L_3-L_4 level and advanced 2-3 cm cephalad. The catheter was fixed to the patient's back and a millipore filter was attached to the free and resting in the supraclavicular fossa. Treatment consisted of an epidural injection of 2mg morphine sulphate together with 5ml 0.25% bupivacaine followed by 3 ml of normal saline from a separate syringe. Patients were kept for observation 2-3 in the out-patient clinic and afterwards escorted home. Two days after the first dose patients were evaluated.

Those patients who had partial or no relief were reinjected with the same dose and if there was further but not complete relief, a third injection of the same dose was given. If no improvement was noted following the third dose, treatment was discontinued. In patients with complete or nearly complete relief after one week no further injections were administered. The out come of the treatment was assessed on the basis of patient's subjective pain ratings as having no relief, slight, moderate or complete improvement. More objective findings, such as improved straight leg-raising, increasing mobility, and mood improvement were noted. Treatment was considered successful if moderate or complete relief for a month or more following the course of treatment was obtained.

Results

The results are summarised in Table II. The overall treatment success of our study inversely correlated with the symptom duration. In none of our patients

TABLE 1. PATIENTS' DATA

No. of patients:	34
Sex	
Male:	34
Female:	0
Age (yr.)	
Range:	29-46
Mean:	37.4 (6.4)
Height (cm.)	
Range:	164-178
Mean:	169 (5.5)
Weight (kg.)	
Range:	66-92
Mean:	76 (6.9)
Duration of low back pain (months)	
3-12:	24
12-24:	6
24-32:	4

TABLE II. TREATMENT OUTCOME

No. of injections:	Moderate to complete improvement:	Partial improvement:	No improvement:
I	16	4	14
II	19	3	12
III	19	3	12
TOTAL:	19(55.9%)	3 (8.8%)	12 (35.3%)
Improved straight leg-raising:	14 (41.2%)		
Increased mobility:	18 (52.9%)		
Mood improvement:	13 (38.2%)		

were vomiting, urinary retention, constipation or respiratory depression noticed following epidural administration of morphine. Two patients suffered a transient attack of itching on the abdomen and thorax. *(Table II)*

Discussion

The human back is a fascinating intricate system of muscles, tendons and ligaments which keeps the vertebral column from collapsing. Yet, low back pain strikes almost everyone, the young and the old, both sexes, and the people of different occupations and social profiles.

Chronic pain is invariably accompanied by depression[9] and its treatment may be the most important aspect of pain management in some patients. With time, patients with chronic pain develop pain behaviour patterns that may become more harmful than the original nocioceptive substance[10]. Consequently, the treatment of low back pain is undertaken by many specialities and involves a number of interventions rather than a single therapy. Conservative treatment focuses mainly on adequate bed rest. It has been shown that both recumbency and decreased lumbar lordosis help to diminish intradiscal pressure [11,12]. In a recent study, however, it was demonstrated that both the *orthopaedic* hard bed and the waterbed were equally effective in alleviating low back pain, which appears to be in discordance with traditional teaching[13]. The effectiveness and advantages of the use of epidural opiates in different pain conditions in man have been repeatedly emphasized[14],[15]. Some reports, however, are casting doubts on the safety of epidural opiates [16] [17]. In our patients, none of the commonly reported side-effects like vomiting, constipation, urinary retention or respiratory depression were noticed. A transient attack of pruritus was the only side-effect reported by two patients. Patients whose pain had been present for less than a year prior to treatment were those who benefited most. Perhaps the pathological process in those patients has not reached the point of irreversibility as proposed by Murphy[18].

Very little is known concerning eventual neurotoxic effect of epidural opiates. It has been shown, in a postmortem histological investigation of some 30 patients that after long treatment with epidural morphine no neurotoxic effects on nerve roots or spinal cord were detected[19]. We have mixed morphine with bupivacaine because of the previous impression that a local anaesthetic agent may facilitate the binding of epidurally applied morphine to the apiate receptors alongside the scope of its action[20].

SUMMARY

The effectiveness of epidurally applied 2mg morphine sulphate together with 5ml 0.25% bupivacaine in the relief of low back pain was assessed in 34 male patients. Based on a patient's subjective pain ratings, moderate to complete improvement, lasting more than a month, was achieved in 19 (55.9%) patents. Treatment success inversely correlated to symptom duration. It is concluded that epidural medication with low dose morphine together with bupivacaine could be an effective tool in relieving low back pain either as a single or in addition to other forms of therapy.

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