Early mobilisation of acute whiplash injuries

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Abstract

Acute whiplash injuries are a common cause of soft tissue trauma for which the standard treatment is rest and initial immobilisation with a soft cervical collar. Because the efficacy of this treatment is unknown a randomised study in 61 patients was carried out comparing the standard treatment with an alternative regimen of early active mobilisation. Results showed that eight weeks after the accident the degree of improvement seen in the actively treated group compared with the group given standard treatment was significantly greater for both cervical movement ($p<0.05$) and intensity of pain ($p<0.0125$).

Introduction

Rear end collisions causing soft tissue injuries of the neck are common and constitute about 20% of all vehicle accidents.[1] The term whiplash has been coined to describe those injuries due to sudden flexion and hyperextension of the cervical spine. Hyperextension is thought to be the main cause of damage,[2] and the severity of injury depends on the degree of movement of the head and neck on the trunk and the acceleration.[3] These injuries frequently result in prolonged disability, but because of subsequent litigation the authenticity of such symptoms has been queried.[4,5] Recently Merskey reviewed published reports and concluded that many patients genuinely have protracted symptoms.[6] The reports, however, have not placed any emphasis on treatment, concentrating instead on prognosis because of its medicolegal importance.[7,8]

Treatment of whiplash injuries entails a period of immobility using a soft cervical collar and simple analgesia before gradual mobilisation. As the efficacy of this treatment is unknown we examined the response of patients to the standard treatment compared with that of another group given alternative treatment of daily neck exercises and mobilisation using the Maitland technique.

Patients and methods

This prospective randomised trial was carried out with the approval of the hospital ethics committee. Sixty one consecutive patients with acute whiplash injuries presenting to the accident and emergency department were studied over three months. Cervical radiology was carried out to exclude the presence of cervical fractures. Cervical mobility and intensity of pain were assessed, and patients were randomised by sealed envelope to receive active treatment (31 patients) or standard treatment (30).

Intensity of pain was assessed using a linear analogue scale extending from 0 (completely free of pain) to 10 (maximum pain thought possible). Cervical movement was measured with a goniometer (Lic Rehab Care Svetsary, 45-17183 Solna, Sweden), which measures joint movement by means of a compass and inclination needle. Total cervical movement—that is, flexion, extension, right and left lateral flexion, and right and left rotation—was calculated, giving a numerical score.

The group assigned to receive active treatment received applications of ice in the first 24 hours and then neck mobilisation using the Maitland technique and daily exercises of the cervical spine. The Maitland technique of joint mobilisation may be adapted to various symptoms, including pain, stiffnes and spasm. Repetitive and passive movements within the patients' toleran were carried out, tiny movements and movements with a restricte amplitude being used for pain and spasm, and movements with larg amplitude for stiffness. Local heat was applied after each treatment. Dai exercises were performed every hour at home, again within the limits pain; no analgesia was needed for this mobilisation treatment or th exercises. The group given standard treatment received a soft cervical coll and were advised to rest for two weeks before beginning gradual mobilis tion. All patients were given simple oral analgesia as required. Four ar eight weeks after the accident both groups were assessed for residual pa and cervical movement by one of us (KM), who was unaware of the patie management.

Cervical movement was assessed using the paired t test for changes with the groups. The two sample test was used for the analysis between th groups. Because visual analogue scales are more suited to non-parametr analysis intensity of pain was evaluated by the Mann-Whitney U test f changes within and between the groups.

Results

The two groups were well matched for age and sex (mean (SD) age 3 (10·6) years in the group given active treatment and 28·7 (10·4) years in th group given standard treatment; ratio of men to women 21:10 and 16:1 respectively). Known radiological prognostic signs of whiplash injurie such as cervical spondylosis and loss of cervical lordosis, were similar in bo groups. Five patients from each group were withdrawn from the statistic analysis because of incomplete data (that is, data were available for only or follow up assessment).

Pain—The two groups were assessed for pain initially and at four ar eight weeks (table I). The group given active treatment showed the greate improvement at four weeks ($p<0.001$), which persisted at eight weeks. Th group given standard treatment also showed a significant improvement four weeks ($p<0.05$); there was no further significant improvement at eig weeks. Though pain in both groups was similar initially, pain in the grou given active treatment was significantly less than that in the grou given standard treatment at both four weeks ($p<0.05$) and eight weel ($p<0.0125$).

TABLE I—*Mean (SEM) pain score initially and four and eight weeks after accident*

	Initially	4 Weeks	8 Weeks
Active treatment	5·71 (0·44)	2·85 (0·57)	1·69 (0·43)
Standard treatment	6·44 (0·41)	5·08 (0·48)	3·94 (0·58)

Movement—On initial examination both groups were similar (table II Movement increased significantly in the group given active treatment at fou weeks ($p<0.001$) and eight weeks. In the group given standard treatmer movement after four weeks was slightly though not significantly improve compared with the initial value. At eight weeks improvement in this grou was significant ($p<0.05$). At eight weeks movement in the group given activ treatment was significantly greater than that in the group given standar treatment ($p<0.05$).

TABLE II—*Mean (SEM) score for cervical movement initially and four and eight wee after accident*

	Initially	4 Weeks	8 Weeks
Active treatment	19·92 (1·74)	29·03 (2·12)	34·11 (1·50)
Standard treatment	25·00 (2·17)	27·56 (2·09)	29·57 (1·61)

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Discussion

The purpose of this study was to examine the value of early mobilisation in whiplash injuries. Our experience had suggested that many patients with whiplash injuries present late, after a period of immobility, with persistent pain and stiffness. Published reports offer no guidance for treating these injuries, though the application of a soft cervical collar in conjunction with simple analgesia and muscle relaxants, followed by gradual mobilisation, is standard practice. Macnab supported this policy together with bed rest initially and use of skull traction if symptoms are severe or persist.[1]

We found that patients who are treated actively show significantly greater improvement in both cervical movement and intensity of pain compared with patients treated in the standard way. At four weeks a significant increase in cervical movement occurred in the patients given active treatment ($p<0·001$) but not in those given standard treatment. At eight weeks cervical movement was significantly greater in the patients given active treatment than those given the standard treatment ($p<0·05$), indicating that the increase in cervical mobility occurred earlier and to a significantly greater degree with active treatment.

The assessment of pain poses problems because of its subjective nature. We used a modified linear analogue scale from 0 to 10, representing the two extremes of pain. Patients scored their pain according to its severity. Such pain scales are both simple and effective to administer.[9] We found that all patients scored in a consistent fashion despite being unaware of their previous responses. At both four and eight weeks the improvement in pain was significantly greater in the group given active treatment, so that these patients had significantly less pain at four ($p<0·05$) and eight weeks ($p<0·0125$) compared with the patients given standard treatment.

In conclusion, our results confirmed expectations that initial immobility after whiplash injuries gives rise to prolonged symptoms whereas a more rapid improvement can be achieved by early active management without any consequent increase in discomfort.

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SHORT REPORTS

Randomised trial of self hypnosis for analgesia in labour

We undertook a randomised trial to evaluate the effect of self hypnosis on pain relief, satisfaction, and analgesic requirements for women in their first labour.

Patients, method, and results

Criteria for inclusion in the trial were normal pregnancy and a desire to avoid epidural anaesthesia. Eighty two primigravidas were recruited and randomly allocated to the hypnosis group (42 women patients) or the control group (40). Thirteen women were subsequently excluded because of pre-eclampsia (one), breech presentation (three), or delivery by caesarean section (nine). Four failed to attend for hypnosis. Thus we evaluated 29 patients in the hypnosis group and 36 in the control group.

Both groups attended routine weekly antenatal classes. Women in the hypnosis group were also seen individually every week from 32 weeks' gestation. Suggestions were made under hypnosis regarding relaxation and pain relief. Patients were encouraged to imagine warmth or anaesthesia in one hand and shown how to transfer this to the abdomen. Hypnotic depth was assessed with the Stanford hypnotic clinical scale.[1] Five patients were good hypnotic subjects, 19 moderate, and five poor.

Effect of hypnosis on use of analgesia and mode of delivery

	Hypnosis group (n=29)	Control group (n=36)	Significance
Mean duration of pregnancy (weeks)	39·9	39·3	$p<0·05$
Mean duration of labour (h)	12·4	9·7	$p<0·05$
Analgesia*:			
Nil/Entonox	6 (21)	7 (19)	NS
Pethidine	15 (52)	20 (56)	
Epidural	8 (27)	9 (25)	
Mode of delivery*:			
Spontaneous	24 (83)	25 (69)	NS
Forceps	4 (14)	9 (25)	
Ventouse	1 (3)	2 (6)	

*Figures are numbers (%) of patients.

The table shows the duration of pregnancy and labour, analgesic requirements, and mode of delivery. Overall, 17 of the 65 women received epidural analgesia. The incidence of normal deliveries was lower in women who received epidurals (3/17 (18%)) than in those who did not (39/48 (82%); $\chi^2=6·25$, $p<0·01$). There was no difference in the proportion of women given epidural analgesia between the hypnosis and control groups. Good or moderate subjects had fewer epidurals (4/24) than did poor subjects (4/5; $p<0·01$).

All patients were questioned about pain relief and satisfaction in labour using a linear analogue scale. There was no significant difference between the two groups in terms of efficacy of pain relief. Of the women who used hypnosis, 15 (52%) were "very satisfied" with labour (score 8-10 on linear analogue scale) compared with eight (23%) in the control group ($p=0·08$). Scores were similar in good and poor hypnotic subjects. Seven women, all good or moderate hypnotic subjects, reported that hypnosis had been instrumental in reducing anxiety and helping them cope with labour.

Comment

In a non-randomised trial of self hypnosis Davidson found that the first stage of labour was significantly shortened, analgesia was more effective, and labour was a more pleasant experience.[2] Our small randomised trial did not show increased efficacy of analgesia in women undergoing hypnosis. Overall, the proportions of women given epidural analgesia were similar in the hypnosis and control groups. Good or moderate hypnotic subjects appeared more likely to avoid epidural anaesthesia than poor subjects. As with previous results, there was a trend for labour to be more satisfying for women who used hypnosis. A subset of good or moderate hypnotic subjects found self hypnosis exceptionally helpful.

Charles *et al* failed to confirm Davidson's finding of shortened labour in women using hypnosis.[3] We found that labour was significantly prolonged in the hypnosis group. The mean duration of pregnancy was also increased, though an additional three or four days may not be clinically important. The mechanisms by which hypnosis might alter the obstetric course are conjectural; modification of hypnotic technique (for example, using appropriate posthypnotic suggestion) could perhaps obviate this effect.

This is the first randomised trial of hypnosis in labour. Self hypnosis seems not to be an effective form of analgesia for routine use, though it may help to make childbirth a more satisfying experience. We think it reasonable to comply with a request for a trial of hypnosis in labour, provided that the woman is a good or moderate hypnotic subject. Prolongation of pregnancy