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A CONTROLLED TRIAL OF CONTINUOUS LUMBAR TRACTION IN THE TREATMENT OF BACK PAIN AND SCIATICA

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SUMMARY

A controlled trial of continuous lumbar traction in the treatment of back pain and sciatica showed similar improvements in both the treated group (weighted traction) and the control group (simulated traction). The findings of this study question the justification of admitting patients with back pain into hospitals for purposes of traction alone.

KEY WORDS: Back pain, Treatment.

BACK pain is common and is responsible for the loss of 12 million working days in the United Kingdom every year [1]. Although the cause is often uncertain, lumbar disc disease is considered to be responsible in many cases. There are numerous nonsurgical methods of treatment, but the effectivensss of these is uncertain and tradition rather than scientific evidence frequently accounts for their continued use.

One of the most popular forms of treatment is lumbar traction. It is common practice for patients with back pain and sciatica to be admitted to hospital for bed rest and continuous traction for 2–6 weeks.

PATIENTS AND METHODS

Forty-one patients admitted to hospital for back pain and sciatica were randomly allocated to groups A and B, the former being given continuous lumbar traction of 5.5–8.2 kg according to body weight, the latter having continuous traction of only 1.4–1.8 kg according to body weight. Traction was applied with the patient supine on a tilted bed (foot end raised on a 23 cm high wooden block) by means of a pelvic harness pulled by metal weights over a pulley. The weights were encased in an aluminium container. The ward sister was responsible for the random allocation, neither patient nor medical assessor being aware of the amount of traction.

Each patient was assessed on admission, weekly in hospital and subsequently at the follow-up out-patient clinic. The following parameters were recorded at each assessment:

(a) Pain score according to a visual analogue scale (0–100 mm).
(b) The number of analgesic tablets taken during the 24 hours immediately preceding the assessment.
(c) The straight-leg raising angle (to the nearest 5°) in each leg using the Zinovieff inclinometer [2].
(d) Neurological deficits in the legs.

Other parameters were the length of stay in hospital and the length of time after treatment before successful return to work.

Information regarding withdrawal from the trial, surgical referral and side-effects were recorded.

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A nonparametric test (Wilcoxon's rank sum test) was used to examine differences in both temporal variation of a certain parameter within a given patient group, and the nature of the distribution at a given time between the two patient groups. Parameters examined by this means were analgesic consumption, pain score, straight-leg raising angle, and length of stay in hospital. The chi-squared test was used to compare the number of patients in each group showing neurological deficits as the study progressed. The same test was used to compare the time taken by patients to return to work after leaving hospital.

RESULTS

Thirty-nine patients completed the trial, one patient in each group withdrawing after a few days because of home circumstances. One patient from Group A was referred for consideration of surgical treatment. The treatment was well tolerated by both groups.

The comparability of the two groups on entry is shown in Table I which also illustrates the results of the patients in both groups.

Within 2 weeks of admission, analgesic consumption by each group was significantly less ($p < 0.01$). At no time was there any statistically significant difference in analgesic consumption between the two groups. A similar pattern was seen in the pain score with both groups recording a reduction of pain after only one week ($p < 0.01$), and a substantial reduction after two weeks ($p < 0.001$). Likewise the straight-leg raising angle increased appreciably after one week in hospital ($p < 0.001$) and thereafter continued to improve.

On admission to hospital 12 out of 24 patients in group A showed neurological deficits in their legs compared with 11 out of 15 patients in group B (Table II). The neurological deficits consisted of sensory impairment (seven patients in group A and eight patients in group B), weakness (four in group A and two in group B) and diminished or absent ankle jerks (five in group A and four in group B) singly or in combination. The numbers of subjects in each

TABLE I
SUMMARY OF PARAMETERS RECORDED IN THE STUDY

Parameter	Patient group	
	A	B
Number of males	15	8
Number of females	9	7
Mean age (years)	38	39
Median values:		
Duration of pain (days)	42	56
Analgesic consumption (no. of tablets) on admission	4	2
after 1 week	2	2
after 2 weeks	0	0
after 3 weeks	0	0
Pain score (VAS in mm) on admission (0–100 mm)	50	50
after 1 week	25	15
after 2 weeks	6	9
after 3 weeks	5	3
Straight-leg raising angle (degrees) on admission	30	40
after 1 week	55	55
after 2 weeks	60	85
after 3 weeks	60	75
Length of stay in hospital (weeks)	3	2
Range of time spent in hospital (weeks)	1–6	2–5

TABLE II
NEUROLOGICAL DEFICITS

Patient group	Total no of patients	No. of patients with neurological deficits at week: 0	1	2	3	4	6
A	24	12	8	4	1	1	0
B	15	11	7	5	3	0	0

TABLE III
RETURN TO WORK

	<3 months	3–6 months	>6 months	Not returned on review (up to 2 years)	No. returned to work	Comment
Group A	7	6	5	4	18	Information not available in 2 patients
Group B	3	4	2	4	9	Information not available in 2 patients
Total	10	10	7	8	27	

group exhibiting deficits decreased with time, and analysis of variance indicated no difference between the two groups. The rate of return to work was also similar (Table III).

DISCUSSION

It is recognized that most patients with back pain and sciatica improve when treated with bed rest [3]. Our aim has been to determine if continuous lumbar traction as currently practised conferred additional benefit. Traction may have psychological effects, and we thus felt that it was desirable to compare continuous traction with 'simulated' traction using minimal weights. The results of our trial indicate that conventional continuous traction carries no advantage over simulated traction. This would support the view that any benefit from continuous traction derives from the enforced immobilization rather than from actual traction forces on the lumbar spine.

We admit that the number of patients in this trial is small and that the parameters used may not have been sensitive enough to detect minor degrees of benefit. However, we were unable to demonstrate a statistically significant difference between the two groups with respect to any of the recorded parameters. Our findings must question the justification for admitting such patients to hospital specifically for continuous traction. It may be that minimal-weight traction at home as a complement to complete bed rest may have an important place and might obviate the need for costly hospitalization.

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REFERENCES

1. Waddell G. An approach to backache. *Br J Hosp Med* 1982;**28:**187–219.
2. Zinovieff A, Harborow PRH. Inclinometer for measuring straight-leg raising. *Rheumatol Rehabil* 1975;**14:**115.
3. Brown MD, Jackson C. Editorial Comment. *Clin Orthop Rel Res* 1983;**179:**2–3.