LATERAL EPICONDYLALGIA : TREATMENT BY MANIPULATION UNDER ANAESTHETIC AND STEROID INJECTION AND OPERATIVE RELEASE

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A retrospective study of 112 cases of lateral epicondylalgia treated between April 1995 and April 1998 was conducted. The treatment modalities included manipulation under anaesthetic and operative release. A questionnaire was used to assess the outcome. The patients who were unresponsive to conservative treatment either had manipulation under anaesthetic and a steroid injection or had an operative release. Those who had manipulation under anaesthetic and injection had 33.3% satisfactory outcome for pain and function at 17.2 months mean follow-up. Among those who had operative release, 69% had satisfactory outcome for pain and function at 17.2 months mean follow-up. The results of manipulation under anaesthetic and steroid injection are not good enough for this treatment to be recommended in the management of tennis elbow. It is more effective to treat the patients unresponsive to conservative treatment with open release.

Keywords : lateral epicondylalgia ; manipulation ; release ; outcome.
Mots-clés : épicondylalgie ; manipulation ; désinsertion ; résultat.

INTRODUCTION

Lateral epicondylalgia is a common soft tissue condition that has many modalities of nonsurgical treatment. It was first described by Runge in 1873 (12). In a population study of 15,000 subjects the incidence was 1 to 3% (1). This condition is more common in tennis players, houseworkers, and people who are involved in repetitive manual work involving forceful supination and pronation (3, 6, 13).

Mills first described the method of manipulation under anaesthetic in a patient who had dramatic relief (14). Cyriax used several sessions of local friction in combination with Mills' manipulations and reported substantial success (8, 19).

The purpose of this study was to evaluate the success rate of Mills manipulation and of surgical treatment.

MATERIALS AND METHODS

We retrospectively analysed the case notes of 112 consecutive patients treated from April 1995 to April 1998. These patients were differentiated in two groups depending on the treatment they underwent. A questionnaire was sent to all of the patients. There were 54 patients in one group who had Mills' manipulation under general anaesthetic (MUA) and an injection. The patient under general anaesthetic was given a mixture of triamcinolone acetonide 40 mg and 1 ml of 0.5% bupivacaine at the tenderest spot around the lateral epicondyle and then the elbow was manipulated. The Mills manipulation was extension at the elbow with full pronation and volar flexion of the wrist from the position of extreme dorsiflexion. Quite often a snap was felt at the level of the lateral epicondyle of the humerus. The patients were left free to mobilise within the limit of comfort but were told not to force the elbow or wrist in any strenuous

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Table I. — Demographic distribution of the patients

Characteristic	Open release (n = 58) Mean (range)	MUA + Injection (n = 54) Mean (range)
Age (years)	43.6 (34.2 to 63.3)	42.5 (35 to 64.7)
Sex	23 males ; 35 females	22 males ; 32 females
Occupation	26 manual labour ; 22 partial manual labour ; 10 desk job	23 manual labour ; 20 partial manual labour ; 11 desk job
Length of sick leave in last year	23.3 days (6 to 36)	24.6 days (1 to 44)
Physiotherapy	46	46
Previous steroid injection	23 patients : 3 injections ; 24 patients : 4 injections	24 patients : 3 injections ; 22 patients : 4 injections
Duration of symptoms (pain and/or any loss of function)	14.4 months (6 to 32 months)	15.2 months (7 to 34 months)
Insurance claims	5	6
Mild disability	17	17
Moderate disability	34	32
Severe disability	7	5

activity. They were followed-up for a period of 3 months and then were discharged if they had no symptoms. Those who had no relief or had recurrence were listed for operative release under a general anaesthetic.

There was no statistical significant difference between the two groups for age, sex, duration of symptoms, type of occupation, sick leave, and pre-operative treatment ($p < 0.05$). These characteristics are described in table I. The pre-operative disability was classified as mild, moderate and severe as follows :

Mild : mild to moderate pain ; is able to do most of the activities at work or home but with some discomfort.

Moderate : moderate pain and approximately 50% restriction in activities at work.

Severe : unable to work due to pain.

The second group included 58 patients who underwent an open release. The technique was a lateral incision from 1 inch above the lateral epicondyle to 1 inch below it. The extensor carpi radialis brevis origin and the aponeurotic part of the common extensor tendon were released with a 15 number blade. The forearm was rested in a sling for 2 weeks after the operation.

Five patients who had manipulation and injection and seven patients who had operative release did not reply to the questionnaire when sent to them for the first time. All the patients eventually replied after sending the postal questionnaire a 2nd or 3rd time.

A scoring system based on the questionnaire was devised for the follow-up as shown in table V. The scores assessed pain and function. This is not a validated scoring system. It was used to give an assessment of the daily function and level of disability of these patients. The total score was out of 100 and the outcome was measured as <60 : poor ; 61-70 : fair ; 71-80 : good ; 81-90 : very good ; 91-100 : excellent. The patients who were in the "good" group and above were considered to have satisfactory outcome. Patients who were poor or fair had moderate to severe disability as defined above. To compare the outcome between operation and manipulation we used a contingency table and Chi-square test after regrouping the patients as per their outcome and disability (table IV).

RESULTS

The range of follow-up was from three months to 38 months (table III). The mean follow-up was 17.2 months.

There were 58 patients who had operative release. Patients who had none, occasional or mild pain after the treatment were considered to have satisfactory outcome. Considering pain as the only criterion 42 (72.4%) of the 58 patients had satisfactory outcome at a mean follow-up of 17.2 months. Twenty (37%) of the MUA + Injection group had a satisfactory outcome at the mean follow-up of 17.2 months (table II).

Table II. — Pain profile of two groups

	Open release	MUA + Injection	Outcome
No pain	11 (19%)	5 (9.3%)	
Occasional pain	22 (37.9%)	5 (9.3%)	Satisfactory
Mild pain	9 (15.5%)	10 (18.5%)	
Moderate pain	11 (19%)	24 (44.4%)	
Severe pain	5 (8.6%)	10 (18.5%)	Unsatisfactory
Total	58 (100%)	54 (100%)	

Table III. — Mean scores of patients at last follow-up.

	Open release		MUA + Injection	
	Number	Mean score	Number	Mean score
Overall	58	71.6	54	61
3-12 months	18	73.3	30	59.2
12-24 months	23	63.2	10	70
24-36 months	16	70	12	59.2
> 36 months	1	80	2	45

Table IV. — Outcome of patients after operative release and MUA + Injection

Outcome (score)	Open release	MUA+Inj
Excellent (91-100)	10 (17.2%)	2 (3.7%)
Very good (81-90)	21 (36.2%)	9 (16.7%)
Good (71-80)	9 (15.5%)	7 (13.0%)
Fair (61-70)	12 (20.6%)	16 (29.6%)
Poor (<60)	6 (10.3%)	20 (37.0%)
Total	58 (100%)	54 (100%)

Applying the criteria of pain and function using the scoring system based on our questionnaire, there were 40 (69%) of the 58 patients of the operative group and 18 (33.3%) of the 54 patients of the manipulation + injection group who had satisfactory outcome at 17.2 months follow-up (fig. 1 ; table IV). The difference of outcome between the two methods of treatment was significant [(p = 0.001), chi squared- 18.374 ; degrees of freedom, df = 4].

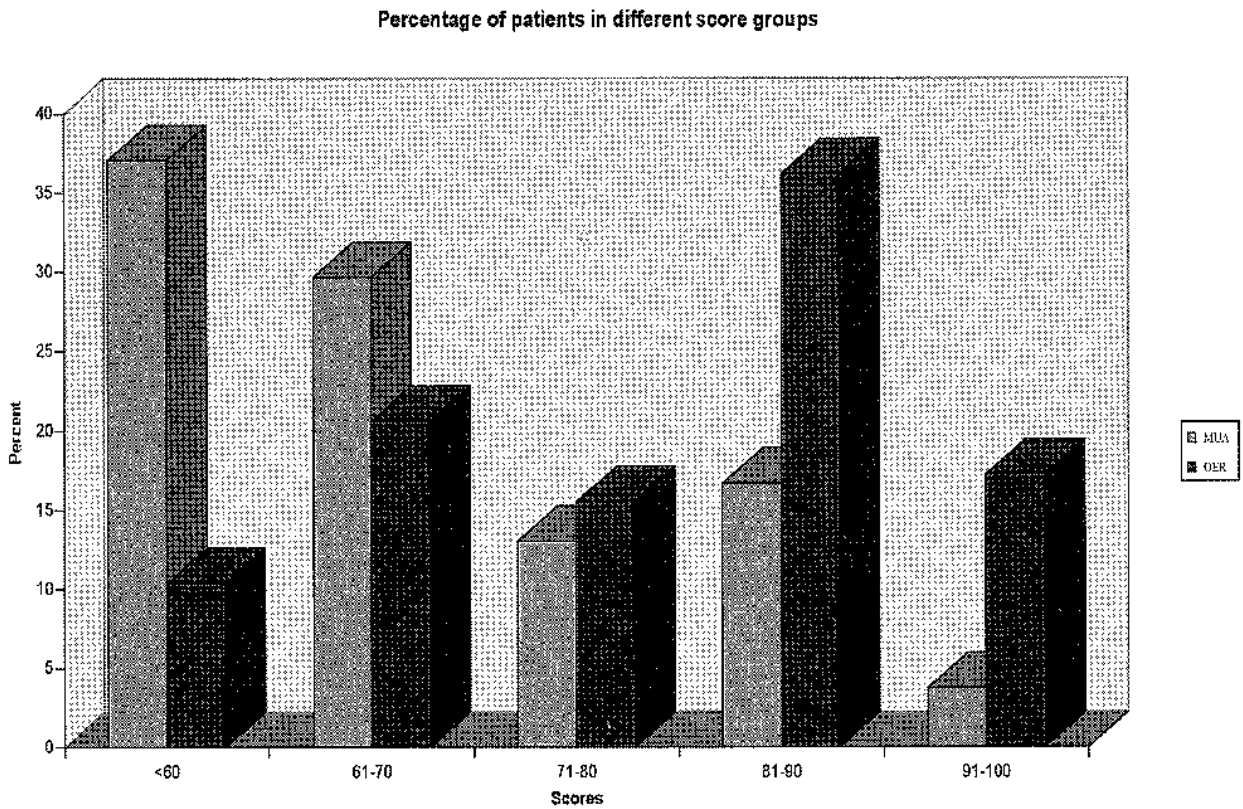

Fig. 1. — Comparison of two modalities of treatment.
MUA – Manipulation Under Anaesthetic + Injection ; OER – Operative Extensor Release.

Table V. — Questionnaire for lateral epicondylalgia

Scoring system for patient questionnaire				
		SCORE		TOTAL
Do you experience any pain in your elbow ?	None	4		
	Occasional twinges	3		
	Mild pain	2		
	Significant pain	1		
	Severe pain	0		
		4		
Compared with before surgery, to what extent can you now perform the following tasks ? (11 tasks)	Much better	4		
	Better	3		
	Same	2		
	Worse	1		
			× 11 tasks	44
task 1 use back pocket (of trousers)				
task 2 rise from chair				
task 3 wash opposite armpit				
task 4 eat with ustensil				
task 5 move hand to back of head (eg combing hair)				
task 6 carry 10-15 lbs with arm at side				
task 7 dress				
task 8 pulling objects				
task 9 throwing objects				
task 10 usual work (* *please specify below)*				
task 11 usual sport (* *please specify below)*				
* Please specify your usual work :				
* Please specify your usual sport :				
Are you now restricted in the type of work you are able to do because of your elbow ?	Yes	1		
	No	2		
				2
On a scale of 1 - 10, how satisfied are you with the care you have received for your elbow ?	Dissatisfied	0		
	Satisfied	10		
				10
Do you experience pain when moving your arm in any of the following ways ? (5 aspects)	No pain	8		
	Mild pain	6		
	Moderate pain	4		
	Severe pain	2		
			× 5 aspects	40
aspect 1 at rest				
aspect 2 bending fully				
aspect 3 straightening fully				
aspect 4 twisting palm of the hand downwards				
aspect 5 twisting palm of the hand upwards				
				100

DISCUSSION

Many physicians regard lateral epicondylalgia as a self-limiting condition that gets better in 8 to 12 months (2, 7, 16). Various reports suggest that 10% of the patients with lateral epicondylalgia are resistant to treatment (4, 5, 10). Wadsworth (20) reported that in the 100 resistant cases over the last 20 years, a repeat Mills manipulation under a general anaesthetic and injection of steroid and local anaesthetic was required in only 6 patients and surgical intervention was needed in only one patient. Cyriax (7, 8, 19) described 12 sittings of massage and Mills manipulation and compared it with local steroid injection. He found that steroid injection gave better pain relief though there was a significant recurrence rate for the injection at 6 weeks.

We used the method described by Wadsworth (20) to treat the patients resistant to conservative treatment. Our results of 33.3% success are very poor. There are very few articles that have described the results of this type of treatment in the literature (14, 20). Verhaar (18) emphasised that postoperative rest of the elbow was important in any type of treatment. Cyriax (7) said that if more than 2 adequate steroid injections fail to cure then a third one is rarely useful. The cause of poor outcome in our series could be the prolonged conservative treatment involving too many steroid injections and also inadequate rest after manipulation.

Many authors have described surgical treatment in the form of common extensor origin release (9, 18), excision or division of the annular ligament (4), excision of the common extensor origin bursa and the synovial fringe (5), resection of the extensor carpi radialis brevis and decortication of the lateral epicondyle (11, 15) and simple fasciotomy of the common extensor origin (15). The long-term results of the lateral release operation are good in 90% to 96% as per the above authors. The one-year result of the lateral release done under local anaesthetic was 77%, which improved to 90% at five years in the series of Verhaar *et al.* (18). Our results with using the criteria of the scoring system were favorable in 69% of cases at a mean follow-up of 17.2 months. The use of the questionnaire and the scoring system was to help us to evaluate pain and loss of function. Any other system of questionnaire, which gives a comprehensive assessment of the patients' problems, may be used. Our system was most suitable for the local population. This is not a standard system and has not been validated. However it gave us a reasonable estimate of the patient's functional deficit. Our results after operative release are not as good as described in the literature. There could be several reasons for this. The patients often presented to our clinic late. They had several local steroid injections by the general practitioner. Too many steroid injections in the common extensor tendon could cause degenerative changes. Postoperatively patients' forearms were not splinted. Our mean follow-up was 17.2 months. It is possible that our results might improve with time, as shown by Verhaar (18).

The number of steroid injections during the conservative treatment should not be more than two and there should be three weeks of rest to the elbow after either form of treatment. The efficacy of the manipulative treatment as recommended by Wadsworth has been poor in our study. There is a lack of data in the literature on this type of treatment. Although our study was retrospective, it was useful in that it showed a significant difference in the two treatments. All the patients were followed up and the two groups were comparable for several parameters. Despite the bias in this sample the study does question the role of manipulation under anaesthetic with injection as an appropriate treatment for resistant tennis elbows. Thus there is a need for a prospective randomised trial to compare the treatment of manipulation under anaesthetic and operative release.

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SAMENVATTING

S. MADAN, R. L. JOWETT. Vergelijkende studie van de resultaten bekomen bij tennis-elleboog met manipulatie en cortison-infiltratie onder anesthesie versus pees-desinsertie.

De auteurs bestudeerden retrospectief 112 gevallen, behandeld tussen april 1995 en april 1998, zoals hoger aangegeven. De resultaten werden beoordeeld aan de hand van een vragenlijst. Alleen wanneer klassieke conservatieve therapie was mislukt kregen de patiënten één van beide genoemde behandelingen. Manipulatie met Sortison-injectie onder narcose leidde na gemiddeld 17,2 maanden tot een bevredigend resultaat qua pijn en functie in 33,3% der gevallen. Heelkunde garandeerde een gelijkaardig resultaat in 69% der gevallen, na dezelfde folow-up periode. Eerstgenoemde behandeling blijkt dus onvoldoende resultaat op te leveren, terwijl de tweede meer afdoend overkomt, wanneer de klassieke conservatieve therapie heeft gefaald.

RÉSUMÉ

S. MADAN, R. L. JOWETT. Comparaison des résultats obtenus dans l'épicondylalgie latérale par manipulation sous anesthésie et injection de corticostéroïdes et par désinsertion tendineuse.

Les auteurs ont étudié rétrospectivement 112 cas d'épicondylalgie latérale traités entre avril 1995 et avril 1998. Le traitement utilisé a été soit une manipulation sous anesthésie, soit une désinsertion tendineuse chirurgicale. Le résultat a été évalué au moyen d'un questionnaire. Les patients qui n'avaient pas répondu au traitement conservateur ont subi l'un ou l'autre des deux traitements mentionnés. Parmi ceux qui ont été traités par manipulation sous anesthésie et injection, les auteurs ont noté 33,3% de résultats satisfaisants concernant la douleur et la fonction, avec un recul moyen de 17,2 mois. Parmi ceux qui ont subi une désinsertion tendineuse chirurgicale, 69% avaient un résultat satisfaisant pour la douleur et la fonction au même recul. Il apparaît donc que le traitement par manipulation sous anesthésie et injection de corticostéroïdes donne des résultats insuffisants pour permettre de le recommander dans le traitement de l'épicondylalgie latérale. Le traitement par désinsertion tendineuse chirurgicale apparaît plus efficace chez les patients qui n'ont pas répondu au traitement conservateur..