ANTI-INFLAMMATORY DRUG THERAPY AFTER ARTHROSCOPY OF THE KNEE

A PROSPECTIVE, RANDOMISED, CONTROLLED TRIAL OF DICLOFENAC OR PHYSIOTHERAPY

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We report a prospective, randomised, controlled trial of the effect of either a non-steroidal anti-inflammatory drug (diclofenac sodium) or physiotherapy on the recovery of knee function after arthroscopy. At 42 days after surgery there was no significant benefit from either form of postoperative treatment compared with the control group. Complications attributable to the anti-inflammatory drug occurred in 9.6% of the patients so treated.

Neither the routine administration of a non-steroidal anti-inflammatory agent nor routine physiotherapy is justified after arthroscopy of the knee.

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Muckle (1984) showed that after open meniscectomy, administration of the prostaglandin synthetase inhibitor flurbiprofen decreased postoperative pain and swelling. In patients undergoing arthroscopic meniscectomy Ogilvie-Harris, Bauer and Corey (1985) reported that the use of naproxen sodium for six weeks after surgery was beneficial in promoting earlier return to work and sport. Currently, many such patients are given a postoperative course of a non-steroidal anti-inflammatory drug (NSAID), usually for about a week. Additionally, patients are often prescribed physiotherapy after arthroscopy in the belief that knee function will be regained more quickly although Dandy (1979), in a small uncontrolled study, showed that most did not benefit.

NSAIDs can cause serious side-effects (Paulus 1989) and are expensive; their administration therefore requires to be justified. Our aim was to discover whether anti-inflammatory drugs or physiotherapy enhanced recovery after arthroscopy of the knee.

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PATIENTS AND METHODS

The study was carried out in two hospitals, from 1989 to 1991. The exclusion criteria were:
1) a history of gastrointestinal ulceration, recent dyspepsia or previous adverse reaction to a NSAID;
2) age under 16 or over 60 years;
3) previous knee surgery; and
4) lack of consent for inclusion in the trial.

At the first hospital (Solihull) 83 consecutive patients admitted for knee arthroscopy were considered of whom 58 were entered into the trial and randomised into three groups as follows:
Control group. Patients received no extra postoperative treatment.
NSAID group. This group received 75 mg of diclofenac sodium intramuscularly at the time of operation and 100 mg of slow-release diclofenac sodium (Voltarol; Geigy, Horsham, UK) for seven days postoperatively.
Physiotherapy group. Starting on the day of operation, patients were treated daily by the same physiotherapist until they had achieved full functional recovery.

At the second hospital (Stevenage), 62 patients were entered from 74 consecutive admissions for arthroscopy to the day-care unit. They were randomised to either the control group or the NSAID group. At this hospital the physiotherapy group could not be continued because of local difficulties.

Slow-release diclofenac sodium was chosen as the anti-inflammatory drug because it is a moderately powerful prostaglandin synthetase inhibitor and patient compliance is likely to be better with a once-daily dose. The seven-day course was chosen to reflect current practice in the United Kingdom.

All patients were assessed preoperatively by NCB and in Solihull also by CS. The knee to be operated on was evaluated using the system described by Noyes et al (1983). After randomisation the drugs for the NSAID

group were prescribed by the junior medical staff, the initial injection being given by the anaesthetist.

All the arthroscopies were performed by either NCB, SB or DPP using standard techniques, and the findings were classified as either normal, meniscal tears or 'other'. The last group included cartilage degeneration, loose bodies, ligamentous lesions, etc. Meniscal lesions were treated by resection of unstable torn portions. Degenerative changes were treated by removing obviously loose flaps of articular cartilage and trimming ragged menisci. All knees then had a saline washout, using 2 litres. Postoperatively, gauze, a single roll of orthopaedic wool and a crepe bandage were applied.

In Solihull, the patients in the physiotherapy group were seen by CS on the afternoon after surgery and were allowed home when they were able to straight-leg-raise, demonstrate the home knee exercise regime and walk fully weight-bearing with minimal discomfort.

Patients in all three groups were prescribed Co-codamol (Fisons plc, Coalville, UK) (8 mg of codeine and 500 mg of paracetamol) for postoperative pain. Dressings were reduced at 48 hours and an elastic tube bandage was substituted. All patients were given written instructions on knee exercises to be done at home.

Follow-up was at 7, 14 and 42 days and the patients were seen by either SB, NCB or DPP and their knees assessed using the Noyes score, the examiners having no knowledge of the patients' treatment group. The scores were analysed by a two-way analysis of variance (ANOVA) and 95% confidence limits.

RESULTS

Of the 120 patients in the trial, 17 were women and 103 men. There were 47 in the control group, 52 in the NSAID group and 21 in the physiotherapy group. The clinical details for each group are given in Table I. The average age, sex distribution, side affected and findings at operation were similar in all groups. The 21 patients in the physiotherapy group had a mean of 3.1 (1 to 11) treatment sessions. Table II shows the knee scores (maximum 150) according to hospital and treatment groups.

Analysis of variance showed a significant preoperative difference between the patients at the two hospitals, but no difference between the treatments. Confidence intervals for the differences in mean scores confirmed the similarity between the control and treatment groups (Table III). At 42 days after surgery the maximum possible difference was between 4.6 and 5.3 points. We believe that this level of difference lies within the limits of clinical variation. At seven days, five patients

Table I. Details of the three groups of patients

	Age		Sex		Side		Pathology		
	Mean	Range	M	F	R	L	None	Meniscal tear	Other
Control group	31.6	17 to 57	41	6	25	22	4	26	17
NSAID group	36.5	17 to 58	45	7	25	27	5	33	14
Physiotherapy group	36.7	16 to 58	17	4	11	10	5	9	7

Table II. Knee scores (mean, SD) for each hospital and treatment group before and after operation, using the Noyes scoring system with a maximum of 150

			Postoperative (days)		
Group	Hospital	Preoperative	7	14	42
Control	Solihull (n = 19)	114.5 (19.9)	118.7 (16.4)	134.7 (11.0)	144.8 (8.6)
	Stevenage (n = 28)	107.0 (16.9)	116.0 (11.9)	133.0 (11.3)	141.4 (8.9)
NSAID	Solihull (n = 18)	110.4 (22.0)	119.1 (13.4)	136.6 (9.4)	144.3 (7.7)
	Stevenage (n = 34)	108.7 (12.5)	115.4 (10.5)	129.3 (11.0)	140.6 (9.2)
Physiotherapy	Solihull (n = 21)	108.4 (19.2)	118.1 (10.2)	130.2 (8.9)	141.1 (6.6)

Table III. Differences between the mean knee scores (95% confidence intervals) for the treatment and control groups after operation

	Days after operation		
Group	7	14	42
Control/NSAID (Solihull)	0.4 (−9.4 to 10.2)	1.9 (−4.8 to 8.6)	0.5 (−4.8 to 5.8)
Control/NSAID (Stevenage)	0.6 (−5.0 to 6.2)	3.7 (−1.9 to 9.3)	0.8 (−3.8 to 5.4)
Control/Physiotherapy (Solihull)	0.6 (−7.8 to 9.0)	4.5 (−1.7 to 10.7)	3.7 (−1.1 to 8.5)

in the NSAID group complained of headache or gastrointestinal symptoms which they had not previously experienced. These symptoms had all settled by 14 days and only one patient failed to complete the course of diclofenac sodium. None of the patients in the control or physiotherapy groups complained of such symptoms.

DISCUSSION

This study, like those of Dandy (1979) and Jokl et al (1989), failed to show any benefit from formal physiotherapy after arthroscopy. Paré, Schuppers and Tetteroo (1989) suggested that extra physiotherapy was beneficial in patients over 50 years old who had severe degenerative changes. Too few of our patients were in that age group for us to be able to comment.

In regard to the use of NSAIDs our results do not support the conclusions of Ogilvie-Harris et al (1985). We used the scoring system of Noyes et al (1983) which is more detailed than that used by Ogilvie-Harris. This may explain some of the differences between the two studies. Another factor is that our patients received only a seven-day course compared with the 42 days for their patients.

Side-effects of the NSAID were observed by seven days postoperatively in 19.4% of the treatment group in Ogilvie-Harris' series and in 9.6% in our series. Since we have found no demonstrable benefit from using NSAIDs we can see no justification for their routine prescription after arthroscopy.

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