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Suprascapular nerve block for chronic shoulder pain in rheumatoid arthritis

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The shoulder is commonly affected in rheumatoid arthritis, which may lead to pain at rest and considerable morbidity.¹ Intra-articular injections can be used to treat isolated inflammation of the shoulder but are of dubious value in longstanding disease. The main sensory nerve to the shoulder, the suprascapular nerve, is accessible for percutaneous nerve block.² This is performed routinely by anaesthetists and used commonly in pain clinics but is rarely performed by rheumatologists. We undertook a double-blind study to compare the suprascapular nerve block using steroid and bupivacaine with a conventional intra-articular injection of steroid and lignocaine.

Patients, methods, and results

We studied patients with rheumatoid arthritis according to the 1987 criteria of the American Rheumatism Association³ in whom both shoulders were painful and restricted in movement. The shoulders were randomised for severity. Patients received a suprascapular nerve block (40 mg methylprednisolone mixed with 0.5% bupivacaine and adrenaline; total volume 2 ml) with a sham intra-articular injection in one shoulder. In the other shoulder they received a standard intra-articular injection (40 mg methylprednisolone plus 1% lignocaine; total volume 2 ml) with a sham suprascapular nerve block. Pain and stiffness were assessed on visual analogue scales, the pain index (a modified Ritchie index⁴) calculated, and movement assessed at 0, 1, 4, and 12 weeks.

Twenty patients were recruited to the study; one was unsuitable and two were lost to follow up, so 17 patients (14 women) and 34 shoulders were available for follow up. All injections were performed by the same person (PE), and all assessments were performed blind by the same assessor. The patients had a mean age of 67 (range 53-84) and had had rheumatoid arthritis for 17 (4-29) years. Sixteen were positive for rheumatoid factor, eight had nodules, and 17 had erosions on radiography. The mean erythrocyte sedimentation rate was 48 (3-91) mm in the first hour.

The table shows the results of the treatments. The nerve block improved both pain and the pain index throughout the study, though the pain score was significantly improved only at one and four weeks and the pain index only at one week. The intra-articular injection resulted in a significant improvement in the pain score at one week but did not affect the pain index. After both injections stiffness was significantly im-

proved only at one week. The nerve block produced a substantial improvement in abduction and flexion, though this was significant only for passive abduction at four weeks. The results of a questionnaire on activity did not alter during the study. At 12 weeks 12 patients thought that pain relief had been greater in the shoulder in which the nerve block had been performed and two that it had been greater in the shoulder in which intra-articular injection had been performed; three were undecided.

Comment

Compared with intra-articular steroid injection suprascapular nerve block resulted in significant benefits in terms of duration of pain relief, the pain index, and the range of movement. Stiffness improved for only one week, which suggests that the improvement in pain was unlikely to be a non-specific effect of steroids. Furthermore, the two injections produced different patterns of response.

The nerve block produced an improvement in movements of up to 20% in flexion and abduction. Active movement was greater than passive both before and after injection, possibly because protective spasm occurred when passive movement was attempted. Pain relief produced a greater improvement in passive

Effect of suprascapular nerve block and intra-articular injection of steroid on pain and stiffness in 17 patients with chronic shoulder pain in rheumatoid arthritis. Figures are mean (SE) values

	Weeks after injection			
	0	1	4	12
Pain†:				
Nerve block	59 (7)	33 (8)***	44 (8)*	47 (9)
Intra-articular injection	54 (6)	40 (7)*	47 (9)	53 (9)
Pain index:				
Nerve block	1.52 (0.3)	0.76 (0.2)*	1.05 (0.3)	1.11 (0.2)
Intra-articular injection	1.23 (0.3)	1.17 (0.4)	1.41 (0.3)	1.00 (0.2)
Stiffness†:				
Nerve block	55 (7)	31 (6)**	53 (7)	56 (9)
Intra-articular injection	47 (7)	35 (7)*	44 (9)	55 (9)
Movement (degrees):				
Abduction:				
Active:				
Nerve block	53 (5)	60 (5)	61 (5)	54 (5)
Intra-articular injection	61 (6)	66 (5)	63 (4)	60 (5)
Passive:				
Nerve block	50 (7)	59 (7)	62 (5)*	55 (5)
Intra-articular injection	59 (7)	60 (4)	61 (5)	58 (4)
Flexion:				
Active:				
Nerve block	67 (6)	78 (7)	74 (4)	68 (7)
Intra-articular injection	73 (7)	77 (7)	77 (5)	69 (5)
Passive:				
Nerve block	63 (7)	71 (8)	67 (7)	60 (7)
Intra-articular injection	71 (8)	75 (8)	67 (7)	66 (8)
Rotation:				
Active:				
Nerve block	36 (6)	33 (4)	35 (4)	30 (4)
Intra-articular injection	36 (5)	41 (4)	39 (4)	36 (3)
Passive:				
Nerve block	36 (6)	34 (5)	33 (5)	32 (5)
Intra-articular injection	36 (5)	42 (4)	35 (4)	36 (4)

Significance of difference in value from baseline value: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

† Measured on visual analogue score (0 = none, 100 = severe).

movement. Improvements in rotational movement were seen only with the intra-articular injection.

These results might be improved if patients with pain confined to the posterosuperior region of the shoulder, which is said to respond selectively to a nerve block,⁵ were treated.

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Cholestasis induced by oestrogen after liver transplantation

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Successful liver transplantation is not usually associated with hepatic dysfunction, though both low grade rejection and cyclosporin can induce cholestasis.¹ Natural and synthetic oestrogens also alter hepatic excretory function, occasionally inducing overt cholestasis in susceptible women.² We report on a woman who developed cholestasis associated with oral oestrogen treatment after receiving an orthotopic liver transplant.

Case report

A 20 year old nulligravid woman had had well documented chronic active hepatitis since the age of 5, which had been confirmed by liver biopsy. Other causes of chronic hepatitis had been excluded. Despite corticosteroid treatment for 12 years cirrhosis and oesophageal varices had developed, causing recurrent severe upper gastrointestinal bleeding. Sclerotherapy had proved unsuccessful. She underwent successful liver transplantation. Postoperatively immunosuppression was maintained with cyclosporin 200 mg twice daily and prednisone 10 mg daily. Trough serum cyclosporin concentrations determined by radioimmunoassay remained in the therapeutic range (figure). Within four weeks of the operation results of liver function tests were normal.

Menarche at age 12 had been followed by normal menses, but she had become amenorrhoeic when ill with the repeated gastrointestinal haemorrhages. After

transplantation her menstrual periods resumed and were normal for four months. Severe menorrhagia then developed, resulting in anaemia. This heavy menstrual bleeding was not relieved by treatment with a low dose oral contraceptive (ethinyloestradiol 35 µg) but responded to a higher dose (50 µg). While receiving this higher dose she developed pruritus and biochemical evidence of intrahepatic cholestasis (figure). Withdrawing the oestrogen promptly relieved her pruritus and normalised the liver enzyme activities, but the menorrhagia returned. A final vaginal haemorrhage was managed with ethinyloestradiol 50 µg daily for one week. This second challenge again precipitated pruritus and hepatic dysfunction (figure).

The menorrhagia was controlled by an analogue of gonadorelin, leuporelin acetate, 1 mg daily, and she was also given transdermal oestrogen (a 50 µg patch twice weekly). A normal menstrual cycle was mimicked by giving medroxyprogesterone acetate 10 mg on days 20-27 of each cycle. This regimen produced regular withdrawal bleeding and stable haemoglobin concentrations and results of liver function tests, and she did not have pruritus.

The patient's family history was non-contributory. The donor of the liver had died from a subarachnoid haemorrhage; she had not had a history of liver disease during any of her pregnancies or when taking oral contraceptives.

Comment

The resolution of this patient's pruritus and normalisation of biochemical abnormalities after withdrawal of the high doses of oestrogen on two occasions support an aetiological association between the ethinyloestradiol and cholestasis. Further oestrogen treatment was given transdermally to avoid the first pass effect on the liver. She had not received oestrogen before liver transplantation because of the chronic hepatitis. Her age and response to the operation made fertility seem

Biochemical concentrations before and after liver transplantation and during administration of ethinyloestradiol (shown by vertical stippled columns). Hatched horizontal areas indicate normal ranges