

Periarticular corticosteroid treatment of the sacroiliac joint in patients with seronegative spondylarthropathy

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ABSTRACT

Objective

To evaluate the efficacy of periarticular corticosteroid injection of the sacroiliac joint (SIJ) in patients with seronegative spondylarthropathy in a double blind, controlled study.

Methods

20 patients with seronegative spondylarthropathy and clinical sacroiliitis entered the study. In 10 patients one affected SIJ was treated with periarticular injection of 1.5 ml (40 mg/ml) methylprednisoloneacetate and 1.5 ml (20 mg/ml) lignocaine (MP group), whereas 10 patients received 1.5 ml isotonic sodium chloride and 1.5 ml (20 mg/ml) lignocaine (non-MP group). Clinical assessment at the onset of the study and after two months follow-up included the patients' estimation of pain in the SIJ by the visual analogue scale (VAS) and by a pain index which was calculated from tenderness and stressing tests on the SIJ.

Results

At the two months follow-up examination the VAS ($p = 0.02$) and the pain index ($p = 0.01$) had improved significantly in the MP group compared with the non-MP group.

Conclusion

The results of our study indicate that the periarticular injection of methylprednisolone may be effective in the treatment of clinical sacroiliitis in patients with seronegative spondylarthropathy.

Introduction

One of the characteristic features of seronegative spondylarthropathies is low back pain, which is often due to sacroiliitis (1). Seronegative spondylarthropathies are usually treated with non-steroidal anti-inflammatory drugs and sulfasalazine, but in many cases the pain is not adequately controlled by these. Although synovitis in the limb joints is commonly treated with intra-articular corticosteroids (2), there are only a few reports concerning the use of this kind of therapy for the sacroiliac joints (SIJ) (3-5).

This is evidently due to the fact that intra-articular injection of SIJ is very difficult to perform and success can be guaranteed only with the help of arthrography or computed tomography (5, 6). Therefore we studied the effect of periarticular methylprednisolone treatment of the SIJ in patients with seronegative spondylarthropathy.

Materials and methods

Study subjects

Twenty consecutive patients with seronegative spondylarthropathy (7) and clinical sacroiliitis fulfilling the following criteria were included in the study: age 18 - 60 years; pain for at least one month in the SIJ; tenderness in the SIJ; and positive results on at least two of the following tests: Gaenslen's test (8), Patrick's test (9), and/or thigh flexion test (10); any possible treatment with disease modifying drugs stabilised during the previous three months and oral corticosteroids stabilised during the previous month; and no allergy to lignocaine. If the patient was receiving disease modifying drugs, oral corticosteroids or non-steroidal anti-inflammatory drugs, the medication had to be kept stable during the follow-up.

The study protocol was approved by the ethical committees of Satalinna Hospital and Rheumatism Foundation Hospital. Prior to enrollment in the trial, the study was explained to all patients and their oral informed consent was obtained. The patients were randomised into two groups. In 10 patients one affected SIJ was treated with an intra-articular injection of 1.5 ml (40 mg/ml) methylprednisoloneacetate and 1.5 ml (20 mg/ml) lignocaine (MP group). Ten other patients received 1.5 ml isotonic sodium chloride and 1.5 ml (20 mg/ml) lignocaine (non-MP group). The randomisation was carried out so that equal numbers of patients received methylprednisolone acetate and isotonic sodium chloride in both centres. The randomization and treatment were performed at the same visit at the start of the study.

Treatment

The punctures were performed in the direction of the painful joint 3 to 4 centimetres under the postero-superior iliac

spine and 6 to 7 centimetres from the middle of the sacrum until contact with the bone was achieved. To visualize the position of the needle tip a water-soluble contrast medium was injected before administration of the study solution in 3 patients. In all of these cases the injection proved to be clearly periarticular, outside the SIJ. The injection technique used was similar in the two centres.

Only the physician who gave the injection knew of the contents of the injection; both the patient and the physician who made the clinical assessments were blinded to the treatment.

Table I shows some of the clinical characteristics of the patients in both groups. Table II summarises the diagnoses and the medication administered to the patients. There were more females in the MP group; this difference, however, was not significant as sacroiliitis in the female and male patients was identical. The inflammatory parameters were slightly lower in the MP group, but the extent of inflammation in the SIJ does not necessarily influence the inflammatory parameters.

Clinical assessment

Clinical assessment at the onset of the study and after two months of follow-up included the patients' estimation of pain in the SIJ by the visual analogue scale (VAS), and by a pain index (range 0 - 12) which represented the sum of the following parameters: tenderness of the SIJ, and the results of three stress tests - the Gaenslen's test, Patrick's test and thigh flexion test, each one evaluated on a scale from 0 to 3.

In Gaenslen's test (8) the patient must lie on his/her side with the upper leg

Table I. Clinical characteristics of the 20 patients with seronegative spondylarthropathy.

	Methylprednisolone group (n = 10)	Non-methylpred. group (n = 10)
Age (years), mean (SD)	42 (10)	40 (11)
Number of females	6	3
Number of patients with bilateral radiological sacroiliitis	7	8
Duration of spondylarthropathy (years), mean (SD)	9 (6)	6 (7)
Duration of pain in sacroiliac joint (months), mean (SD)	12 (11)	12 (10)
Erythrocyte sedimentation rate (mm/h), mean (SD)	13 (7)	20 (15)
C-reactive protein (mg/l), mean (SD)	9 (2)	15 (13)
Haemoglobin (g/l), mean (SD)	136 (12)	140 (10)

Table II. Diagnoses and medication of the 20 patients with seronegative spondylarthropathy.

	Methylprednisolone group (n = 10)	Non-methylprednisolone group (n = 10)
Diagnosis (n)		
Ankylosing spondylitis	6	7
Reactive arthritis	2	1
Psoriatic arthritis	2	0
Unilateral sacroiliitis	0	2
Medication (n)		
DMARDs* (sulfasalazine in all 8 pts.)	4	4
Oral corticosteroids	0	1
NSAIDs	10	8

DMARD = disease modifying antirheumatic drug; NSAID = non-steroidal antirheumatic drug.

hyperextended at the hip and the lower leg held flexed against the chest. The examiner stabilizes the pelvis while extending the uppermost (test) leg. In Patrick's test (9) the patient must lie supine with the leg of the involved side placed on the opposite knee. The examiner places one hand on the flexed knee joint and the other hand on the anterior superior iliac spine of the opposite side, and then slowly presses down on both of these points. In the thigh flexion test

(10), with the patient lying supine, sacroiliac pain is elicited by fixing one shoulder and flexing the ipsilateral thigh. Table III shows the median VAS and pain index at the start. They were both higher in the MP group, but the difference was statistically significant ($p = 0.02$) only in the VAS.

To establish the possible systemic effect of the periarticular corticosteroid injection, 5 other patients fulfilling the study criteria were treated with an intramuscu-

Table III. Visual analogue scale and pain index of the sacroiliac joint in the methylprednisolone group (MP) and the non-methylprednisolone group (Non-MP) from the baseline to two months after the injection.

Pain assessment	Median (range) at baseline MP	Median (range) at baseline non-MP	p value*	Median (range) change from baseline to month two ** MP	Median (range) change from baseline to month two ** non-MP	p value *
Visual analogue (VAS) (range)	54.5 (22 - 88)	38.5 (4 - 52)	0.02	-26.5 (-82 - 13)	-1.5 (-47 - 38)	0.02
Pain index of sacroiliac joint (range)	7.5 (4 - 9)	6 (3 - 8)	0.10	-4.5 (-7 - 0)	-1.4 (-4 - 2)	0.01

* Mann-Whitney rank-sum test. ** At two months minus baseline. Negative values indicate a better average outcome.

lar injection of 1.5 ml (40 mg/ml) methylprednisoloneacetate and 1.5 ml (20 mg/ml) lignocaine. In these patients the mean VAS was exactly similar at the start and after 2 months. The mean pain index was somewhat higher after two months, but the difference between the starting and two-months value was not statistically significant. Therefore the systemic effect of periarticular corticosteroid injection cannot explain the results of this study.

The median VAS and pain index values and their change during the follow-up were compared between groups using the Mann-Whitney rank-sum test.

Results

Table III gives the patients' estimation of pain in the SIJ by the VAS and the pain index at the start of the study, and their changes during two month follow-up. At the start the median of both the VAS and the pain index were higher in the MP group, but the difference was significant only in the VAS ($p = 0.02$). The median change in the VAS for the MP group during follow-up was -26.5 while for the non-MP group it was -1.5; this difference was significant ($p = 0.02$). Furthermore, the median changes in the pain index during the follow-up differed significantly ($p = 0.01$) between the two groups, being -4.5 in the MP patients and -1.4 in the non-MP patients.

Discussion

Seronegative spondylarthropathies are a group of diseases characterised by asymmetric oligoarthritis, low back pain, enthesopathies and various kinds of extra-articular features (1). Low back pain in

these patients is mostly due to sacroiliitis. The first clinical signs of sacroiliitis are tenderness and pain. Radiological changes in the SIJ represent late signs of sacroiliitis and may take years to develop; furthermore, not all seronegative spondylarthropathy patients will show them.

Intra-articular corticosteroid injections effectively suppress active synovitis in the limb joints in various forms of arthritis. The anti-inflammatory mechanisms of corticosteroids are not fully understood. The stabilisation of lysosomal enzymes, the decreased synthesis of prostaglandins and collagenase in synovial cells, and the inhibition of lymphocyte-mediated activities have all been suggested to play a role in suppressing synovial inflammation (11).

The SIJ is a deep diarthrodial joint that is difficult to access for intra-articular treatment. Thus there are only a few reports of intra-articular corticosteroid therapy of the SIJ in the medical literature (3-5). However, it is rather easy to perform a periarticular injection of the SIJ and this treatment can also be given to ambulatory patients.

In our study patients receiving a periarticular injection of methylprednisolone into the SIJ showed significant improvement in pain, tenderness and the results of stress tests for a period of at least two months. In patients receiving isotonic sodium chloride there were only small and non-significant changes in these variables during the two-month follow-up. The results of this study indicate that the periarticular injection of methylprednisolone may be effective in the treatment of clinical sacroiliitis in patients

with seronegative spondylarthropathy. However, because the number of patients in our study was low, these results must be regarded as preliminary.

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