

Pain patterns originating from the sacroiliac joints

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Introduction

The sacroiliac (SI) joints are increasingly recognized as a common and significant source of chronic low back pain [1]. Patients with low back pain in the region of the sacroiliac joint, and who respond to intraarticular joint blocks, are suspected to have SI joint pain [2,3]. However, there are few studies on the sacroiliac joint as a cause of low back pain, and the characteristic pain patterns of SI joint arthropathy are not well defined [1,4]. The objective of this study was to investigate the patterns of local and referred pain from SI joints.

Materials and methods

The study sample consisted of 28 patients with low back pain who were suspected to have SI joint pain and who were undergoing SI joint block therapy. In all patients, the relationship between their pain and a zygapophyseal joint or lumbar nerve root had been excluded after a variety of diagnostic blocks had been tested, including zygapophyseal joint blocks and root blocks. The patients were seen either at the pain clinic of Hannan Central Hospital or at Shiga University of Medical Science between July 1994 and June 2001.

Each patient was asked to describe the distribution of the pain before a SI joint injection. In order to simplify the comparison of pain distributions, the sites of the pain were grouped into five regions: a local region, the medial buttock region, the trochanter and lateral thigh

region, the posterior thigh region, and the groin region (Fig. 1). Each patient was asked which region or regions their pain occurred in before they received a SI joint injection.

A diagnosis of SI joint pain was made if all of the following clinical features were present: (1) pain perceived in the region of the SI joint with or without referred pain; (2) the injection of a local anesthetic into the capsule of a SI joint relieved the pain by more than 80% compared with the level of pain before the injection; (3) the pain could be reproduced by physical examination techniques which stress the joint (Gaenslen's test or Patrick's test) [1,2]. Patients with these criteria were selected for this study.

The SI joint injection was performed with the patient lying on a fluoroscopy table in a prone position. A posterior approach allowed visualization of the joints using the technique described by Fortin et al. [4]. Under intermittent fluoroscopic control, and after identifying the inferior extent of the joint, a 22-gauge needle was inserted through the skin from 1–3 cm below the inferior margin of the SI joint, and directed cephalad to strike the ilium 1 cm above the inferior margin of the joint. The accuracy of the placement was confirmed by arthrography. Once the needle had penetrated the joint capsule, a small amount of contrast medium (Iohexol: omnipaque) was injected until the initial instillation of the contrast medium outlined the joint. The volume of contrast injected averaged 2.4 ml per subject (range 2.46 ± 0.66 ml). After the injection of contrast medium, a mixture of 2 ml local anesthetic (1% mepivacaine) and 2 mg dexamethazone was injected into the joint space as a therapeutic procedure.

Patients whose pain was reproduced by intraarticular injection were selected for this study, while those whose pain pattern did not coincide with their original pain were excluded.

For the 28 patients enrolled in this study, SI joint injection was performed into a total of 32 joints. Four

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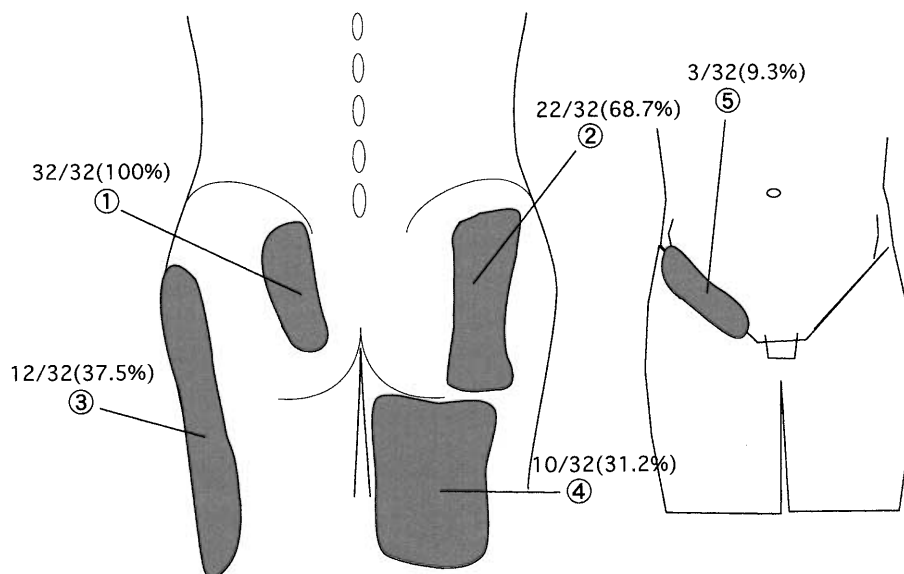


Fig. 1. Pain patterns originating from sacroiliac joints. Numbers and percentages of patients who reported pain in each of five body regions. 1, local region; 2, medial buttock region; 3, trochanter and lateral thigh regions; 4, posterior thigh region; 5, groin region

patients had bilateral joint injections. The patients were aged from 32 to 75 years, with an average age of 58 (± 13) years.

Results

Figure 1 shows the numbers and proportions of patients who reported pain in each of the five regions before the SI joint injection. All patients ascribed pain in a local region to the site over the sacroiliac joint (32/32, 100%), 22 of 32 patients (68.7%) recorded pain in the medial buttock region, 12 of 32 (37.5%) indicated the trochanter and lateral thigh regions, 10 of 32 (31.2%) indicated the posterior thigh region, and 3 of 32 (9.3%) indicated the groin region. None of the patients complained of radicular pain. There were no complications during the study.

Discussion

The referred pain distribution maps of the SI joints derived from this study are similar to the referred pain distribution maps of the L5/S1 lumbar zygapophyseal joints [5,6]. However, it appears that the referred pain from the lumbar zygapophyseal joints is rarely distributed to the local region over the sacroiliac joint [6], which was the perception of all the patients in this study. This fact makes it possible to distinguish SI joint pain from lumbar zygapophyseal joint pain. Furthermore, the finding that there is an absence of referred pain to the lower limb is considered to be significant.

The anterior portion of the SI joint receives innervation from a branch of the L2 to S3 anterior rami. The posterior portion of the sacroiliac joint receives innervation from a branch of the S1 and S2 posterior rami [7]. Lumbar zygapophyseal joints receive innervation from the posterior ramus at the same level and from a descending branch of the medial division of the level above [8]. L5/S1 zygapophyseal joints are innervated L4 medial branches of the posterior rami and L5 posterior rami [8]. Considered in relation to the neurological supply to the SI joint, the distribution of referred pain could also be related to the myotomes supplied by these nerves. In view of the innervation of the joints, the difference in referred pain between SI joints and L5/S1 zygapophyseal joints appeared to be related to the innervation of the S1, S2 posterior rami [7,8].

In conclusion, the major site of referred pain, perceived by all patients, was the local region over the SI joint.

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