Case report

Sciatica and the sacroiliac joint: a forgotten concept

E. Buijs1*, L. Visser2 and G. Groen3

1Department of Anaesthesia and Pain Management, Gelre Hospital Apeldoorn, PO Box 9014, 7300DS Apeldoorn, The Netherlands. 2Department of Neurology, St Elisabeth Hospital, The Netherlands. 3Centre for Perioperative Medicine, Anaesthesiology and Pain Clinic, University Medical Centre Utrecht, Utrecht, The Netherlands

*Corresponding author: Department of Anaesthesia and Pain Management, Gelre Hospital Apeldoorn, PO Box 9014, 7300DS Apeldoorn, The Netherlands. E-mail: e.buijs@gelre.nl

The definition of sciatica is restricted to the pattern and localization of pain, although much emphasis is given to root compression as causative factor. Other sources of similar pain patterns are generally neglected. Despite absence of obligatory neurological signs in radicular syndromes, a number of patients are subjected to extensive, but redundant screenings. In this report, three patients are presented with presumed radicular pain syndromes, whose symptoms finally could be linked to the sacroiliac (SI) joint either via CT and MRI scans or via pain relief by intra-articular injection with local anaesthetics. Possible mechanisms of SI joint-related pain and difficulties in diagnostic specificity of signs and symptoms are discussed.

Br J Anaesth 2007; 99: 713–16

Keywords: anaesthetics local, mepivacaine; analgesic techniques, intra-articular; analgesic techniques, neurolysis

Accepted for publication: July 3, 2007

Sciatica is generally defined as ‘pain in the lower back and hip radiating in the distribution of the sciatic nerve’.1 In the 20s, the sacroiliac (SI) joint was considered to be an important cause for sciatica.2 By the 1930s, it became apparent that the lumbar disc could create sciatica and interest in the SI joint faded.3 Recently, there has been a resurgence of interest in the SI joint as a potential source of low back pain, however, not as a cause of sciatica.4–8 We present three patients who were referred with a clinical diagnosis of lumbar disc herniation, but in whom the diagnosis referred pain from the SI joint was made.

Case reports

Case 1

A 41-yr-old woman was operated for a herniated disc L4–5 in 1995. After operation, the pain did not subside. CT scanning of the lumbar spine ruled out a herniated disc, scar tissue, or root compression. Because of the chronicity of her pain, she was seen by a psychologist. Signs of psychopathology were absent. Manual and chiropractic therapies were ineffective. She was referred to our pain clinic with complaints of pain in the right buttock radiating to the dorsal side of the right upper leg, the lateral side of the calf, and into the great toe. Her pain score on the VAS score was 9.2 (on 0–10 scale; 0=no pain, 10=unbearable pain maximum score). The straight leg raising test (SLR) was negative, but painful at 90° with pain in the back. There were no abnormalities on neurological examination. The SI provocation tests used were the thigh thrust, iliac compression test, and Patrick test (the subject’s SI joint is stressed when the leg is flexed, abducted, and exorotated with overpressure, while the heel rests against the knee)9 and these tests were positive. After fluoroscopic-controlled infiltration of the right SI joint with a local anaesthetic (mepivacaine 2%, 2 ml, Astra-Zeneca, London, UK), her pain was completely relieved for a few hours, the SI provocation tests were negative, and the diagnosis ‘sacroiliac joint related pain’ was made. A radiofrequency (RF) denervation of the right SI joint was successfully performed afterwards. Six months later, she was still pain free.

Case 2

A 48-yr-old woman was operated 24 yr earlier for a herniated disc syndrome at L4–5. After a period of many years without symptoms, she experienced pain in the back and left leg. She complained of a radiating pain starting...
from the left SI region into the dorsal side of the left upper leg, the lateral side of the calf, and into the lateral side of the foot. Her pain score on the VAS score was 6.7. The SLR was positive at 60°. Neurological screening revealed hypeaesthesia in the affected leg. A MRI scan ruled out a herniated disc and scar tissue. She was treated with manual therapy and RF procedures at the facet joints L4–5 and L5–S1 and at the left-sided dorsal root ganglion L5, without success. The patient was referred to our pain clinic. The following SI provocation tests were positive: thigh thrust, iliac compression test, and Patrick test.9 Intra-articular injection, performed under fluoroscopic control, with local anaesthetics (mepivacaine 2%, 2 ml, Astra-Zeneca) relieved her pain for a few hours, the SI test became negative, and the diagnosis ‘sacroiliac joint related pain’ was made. A RF SI joint denervation was successfully performed afterwards. Three months later, the pain had not recurred. She cancelled her 6 month appointment.

Case 3
A woman was first referred to the neurology outpatient clinic at the age of 27 yr because of pain radiating from the buttock into the lower left leg and the great toe. On examination a positive SLR was found at 60°. There were no signs of muscle weakness, decreased reflexes, or sensory loss. A CT scan of the lumbar spine did not reveal abnormalities. Physiotherapy was ineffective. One year later she developed sciatica at the right side, which persisted in varying degrees of severity during the next 10 yr. The neurologist repeatedly suspected a compression of the L5 root, because she had a typically radiating pain into the great toe and the SLR was positive at 60°. During this 10 yr period, she had four CT scans of the lumbar spine, four myelographies, and one MRI of the lumbar spine. All investigations showed no abnormalities. Finally, the SI joints were evaluated. SI provocation tests (thigh thrust, iliac compression test, and Patrick test)9 were positive. Plain X-rays showed extensive sclerosis. Subsequent CT and MRI of the SI joints demonstrated chronic sacroiliitis. Because of the chronic sacroiliitis, the SI joint was not intra-articularly injected. The final diagnosis in this patient was seronegative spondylarthopathy. She was treated by the rheumatologist with anti-inflammatory drugs.

Discussion
Sciatica is a common syndrome in clinical practice and, in general, is considered to be caused by root compression due to disc herniation, lateral or foraminal stenosis, spondylolisthesis, or tumour. However, the presented cases clearly demonstrate that other mechanisms may prevail and that sciatica-like symptoms can be mimicked explicitly by referred pain derived from the SI joints. For that reason, the diagnosis sciatica should be considered as nonspecific. In the first two cases, the involvement of the SI joint in the sciatica-like symptoms was confirmed by an intra-articular injection.

After the RF SI, the pain reduction as measured by VAS was >50% and the two patients (cases 1 and 2) were satisfied with the result and needed no additional treatment. A decision to perform a RF SI is only made in those cases when injection with a local anaesthetic gives a pain reduction of at least 50%. Functional impairment was not measured by questionnaires, but mentioned by the patients. Follow-up was up to 6 months, in which period the effect of the RF SI remained the same. This suggests that it is very unlikely that the effects can be attributed to purely placebo.

These procedures, however, were not indicated in the third case since the SI joint abnormalities on the MRI were evident by which it is very likely that the SI joint was the source of her pain.

Root compression itself is not always a conditio sine qua non for the diagnosis sciatica. The definition emphasizes the pain and its radiation,1 but root compression with or without inflammation is just one of the causes of pain.

Consistency of history taking and physical examination in patients with suspected lumbar nerve root involvement is low. History should be emphasized on increased pain on coughing–straining–sneezing and urine incontinence. Root compression is probable when on physical examination, paresis, sensory loss, reflex changes, or a positive SLR or Braggard test are found.10 However, in 30% of the patients with a strong presumptive diagnosis of a lumbar disc herniation, the diagnosis could not be confirmed by radiological imaging studies or even during operation.11 12 This is in accordance with our clinical experience: in many patients with sciatica, referred to a pain clinic or to a specialized neurological clinic, often no underlying lumbar disc abnormality can be found. If there are no neurological signs or symptoms in patients with radicular pain syndromes other sources of pain, that is, SI joints, should be taken into account, especially when the pain radiates into the lower leg in an area similar to the dermatomes L5 and S1. SI joint-related pain shows similar patterns. It can refer to the buttocks, thigh, upper and lower leg to the lateral ankle5 13 (Fig. 1). These patients frequently complain of pain in the SI area. SLR testing can then be positive. Establishing an accurate diagnosis for SI joint-related pain on physical examination is difficult. The diagnosis is based on a pattern of findings, no single SI joint test is validated and a large variation in reliability is reported.14–17 In 20% of asymptomatic patients, these tests can be positive.18 Although Fortin5 15 described a specific area in patients with SI joint-related pain, pain referral maps are of limited value. There are no specific radiological abnormalities for this syndrome, although CT scan and MRI can be helpful in diagnosing sacroiliitis and joint space narrowing.19 With clinical suspicion of a SI origin of pain, intra-articular injection is currently the only means to confirm that diagnosis.20 although its validity is questioned.21 If SI joint pain is
confirmed, it can be treated by injection with corticosteroids or by RF denervation.22

Besides root compression with or without inflammation and the SI joint, diseases of the lumbar facet joints23 and spinal tumours24 may cause radiating pain into the leg. If imaging techniques do not reveal a possible cause of the pain, differentiation between these possible sources should be performed by blockades with local anaesthetics,25 although false positive findings and low specificity and sensitivity have been reported.26 27

Two of our patients responded positively to intra-articular injection of the SI joints with local anaesthetics. This is considered as the gold standard for diagnosing SI joint-related pain67 and should be performed under fluoroscopy or CT guidance. 62 8

Explanations for the radiating pattern of pain into the leg due to the SI joint are several. First, it can be interpreted as referred pain from this joint, since pain from deep somatic structures is referred just like visceral pain.29 The radiating pattern depends upon the segmental nerve supply of the SI joint, which is considered as primarily deriving from branches from L5 to S4 spinal nerves.30 The character of deep somatic pain is rather diffuse and is described as dull, with a deep aching quality, although, at times, it tends to be more superficially projected.13 31 Secondly, it has been reported that radiating SI joint-related pain may also be considered as segmental nerve-related pain because of the close relationship between the ventral capsule of the SI joint and the spinal nerves L5 and S1, just before where these nerves join to form part of the sciatic nerve.8 Arthrograms of patients with SI joint-related pain sometimes show tears of this ventral capsule.6 It has been suggested that SI capsular irritation and cytokine release may cause adjacent neural insult by these communications.5

Although this latest study demonstrates communication between the dorsal and ventral aspects of the SI joints, the amount of contrast medium injected is not mentioned.8

Finally, one should take into account that radiating pain into the leg can also derive from other structures in the lower back other than the SI joint, particularly when they are supplied by branches from the same spinal nerves, that is, L5–S4.32 33

We conclude that sciatica is a common syndrome, which is not defined specifically. Sciatica generally is related to root compression with or without inflammation, but in the absence of neurological signs, other sources should be ruled out. In a number of cases, sciatica may originate from the SI joint. Single SI joints tests on physical examination are not reliable. Multiple SI provocation tests are helpful, but the gold standard for establishing the diagnosis SI joint-related pain is an intra-articular blockade with low volume local anaesthetics. Recognizing that sciatica can be referred pain from the SI joint is important, since it may prevent unnecessary investigations and operations. Moreover, patients can successfully be treated for this condition.22 34

Fig 1 Schematic representation of radiating pain due to root compression L5 or S1 or due to diseases of the SI joint, according to the mentioned authors.4 5 13 35

Sciatica and the sacroiliac joint
References

2 Yeoman W. The relation of arthritis of the sacro-iliac joint to sciatica, with an analysis of 100 cases. Lancet 1928; 2: 1119–22
14 Wurf van der P, Buijs EJ, Groen GJ. A multietest regimen of pain provocation tests as an aid to reduce unnecessary minimally invasive sacroiliac joint procedures. Arch Phys Med Rehabil 2006; 87: 10–4
34 Buijs E, Kamphuis ET, Groen GJ. Radiofrequency treatment of sacroiliac joint-related pain aimed at the first three sacral dorsal rami: a minimal approach. The Pain Clinic 2004; 16: 139–46