The acute lumbosacral radicular syndrome

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2024

DOI (link to publisher)
10.5463/thesis.591

document version
Publisher's PDF, also known as Version of record

BACKGROUND

Case description

An everyday situation at the Outpatient Neurology Clinic: Robert is a 45 years old man presenting with severe pain radiating into the left leg, all the way down to his little toe. By the time he presents to his neurologist, he already has symptoms for almost 8 weeks. Robert visited his General Practitioner first who diagnosed him with a lumbosacral radicular syndrome and prescribed Tramadol, an opioid, and physiotherapy as a treatment, unfortunately to no effect.

Robert works as a construction worker, a physically demanding job, but cannot work at the moment due to disabling pain. He has no relevant medical history. At neurological examination, there is a diminished sensation of the lateral side of the left foot together with the absence of the Achilles tendon reflex. His neurologist decides to make an MRI of the lower spine, which shows a herniated disc at the left L5-S1 level thereby confirming the diagnosis. Back at the neurologist's office, Robert and his neurologist discuss possible treatments to reduce his pain and to improve his functioning. Is there a need for surgery? Or should he try a corticosteroid injection at the Pain Department first? Robert's wife told him the latter might be successful and even replace 'risky surgery'.

This case story is the starting point of this PhD-thesis.

Definition and terminology

Sciatica, or lumbosacral radicular syndrome, is a disabling condition that is characterized by radiating leg pain, with or without low back pain. In the Netherlands, the term 'sciatica' (or '*ischias*' in Dutch) has been largely replaced by 'lumbosacral radicular syndrome'. However, in (American-)English 'sciatica' is the more common term. As this thesis originates from the Netherlands, but contains articles that have been published internationally, both terms are used.

Patients with a lumbar radicular syndrome may experience tingling or pricking in the dermatomal distribution of a nerve root, but sensory symptoms are usually minor[1]. Paresis, such as foot drop due to weakness of the anterior tibial muscle (in case of L5 radiculopathy), is present in less than half of patients[1]. In more than 85% of cases, lumbar radicular syndrome is caused by a herniated lumbar disc where the nerve root is compressed by disc material that has ruptured through its surrounding annulus[2]. Rarer causes of 'radiculopathy' include spondylolisthesis, lumbar stenosis, foraminal stenosis, and malignancy[1]. The common denominator of all of these causes is the fact that the lumbar nerve root is irritated, which may in turn resulted in inflammation. The latter is evidenced by a range of pro- and anti-inflammatory proteins that have been found in serum, cerebrospinal fluid (CSF) and biopsies of patients with lumbosacral radicular syndrome, including interleukin (IL)-1β, IL-6, IL-8 and tumor necrosis factor (TNF)-α[3-5]. Evidence suggests that it is not so much the pressure on the nerve root that causes lumbosacral radicular syndrome, but a combination of pressure-related, inflammatory, and immunological processes[6,7].

Epidemiology

The prevalence and incidence of the lumbosacral radicular syndrome, as reported in the literature, vary widely due to different definitions and methods of data collection[8]. The yearly incidence of lumbosacral radicular syndrome in the Netherlands has been estimated at 9 per 1000 patient-years[9] and the yearly prevalence has been estimated at 17.2 per 1000 patient-years[9]. In a recently published Danish study, the prevalence of lumbosacral radicular syndrome among primary care patients with low back pain ranged from 2 to 11% in chiropractic clinics and general practices, respectively[10].

The consensus is that the prognosis of the lumbosacral radicular syndrome is favourable. That is, within three months, circa 75% of patients are expected to reach bearable pain levels and to be able to resume their work without surgery[11]. Nonetheless, a recent