Management of radicular pain in rheumatic disease: insight for the physician

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Abstract: Rheumatologists are still relatively unaware of the causes, presentation, diagnosis and management of radicular pain. This is against a background of increasing evidence of the presence and importance of radicular problems in patients with rheumatological disorders. When they coexist in patients, differentiating between nociceptive and neuropathic pain is clinically important because these components require different pain management strategies. Consequently, it is essential that rheumatologists become skilled in identifying as well as managing both forms of pain. This review will serve to further increase awareness among rheumatologists of this important issue as well as discuss the practical aspects of managing these conditions. The evaluation of patients requires very careful history taking and full thorough neurological examination. Diagnostic testing is suggested mainly to confirm the diagnosis and aetiology in patients with persistent symptoms despite conservative treatment. Neuroimaging is recommended for patients with acute radicular pain with progressive neurological deficits or those with high suspicion of neoplasm or epidural abscess. If neuroimaging does not confirm diagnosis, electrophysiology studies may be helpful. The management of this condition is multifaceted and involves physicians and allied healthcare professionals as well as the patients who should be encouraged to participate in self-management programmes. Nociceptive and neuropathic pain often coexists in patients with rheumatic disease. There are challenges to making the diagnosis of radicular pain in these patients. The diagnosis is primarily clinical but pathophysiological issues, diversity in symptoms, the multiple mechanisms of action and difficulties in communication between patients and their doctors as well as variable response to therapy pose challenges to the effective management of these patients. Despite these difficulties and challenges, it is essential that rheumatologists familiarize themselves with the management of radicular pain in rheumatic diseases. The evaluation of patients requires very careful history taking, aided by the use of an appropriate screening tool and full, thorough neurological examination. In addition, investigations such as the use of imaging or electrophysiology studies when required may help to differentiate between the pain phenotypes.

Keywords: neuropathic pain, radicular pain

Introduction

Most rheumatologists do not consider themselves to be pain specialists, despite diagnosing and treating musculoskeletal pain on a daily basis. Rather, most rheumatologists consider themselves to be subspecialists who treat acute and chronic musculoskeletal pain associated with rheumatic disorders [Borestein, 2010]

Surveys of the general populations of rheumatic disease patients have identified that 40–66% have inadequate pain control [Hill *et al.* 2004;

Brevik *et al.* 2006] and that part of the problem might be that patients who have mixed types of pain consisting of both nociceptive and neuropathic components have had the focus of their treatment on mainly the nociceptive component, with the neuropathic component remaining unrecognized or inadequately managed. Radicular pain is equally associated with functional impairment and reduces quality of life as with nociceptive pain for example in association with osteoarthritis [Dray and Read, 2007].

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Table 1. Terminologies, descriptive terms, symptoms and examples.

Terminologies	Descriptive terms	Symptoms	Examples
Nociceptive pain	Pain evoked by noxious stimulation.	Dull, aching pain. No associated allodynia.	Lower back pain.
Somatic referred pain	Noxious pain which is perceived in regions other than those that innervate the site of noxious stimulation. Does not involve stimulation of nerve roots.	Dull, aching gnawing pain. Sometimes described as expanding pressure. It can expand wide into areas difficult to localize. No associated allodynia.	Dull aching lower back pain that spreads to the lower limb and then is localized.
Radicular pain	Pain evoked from ectopic discharges from a dorsal root or its ganglion. Commonest cause is disc herniation. Replaces the use of the older term 'sciatica'.	Describes as electric or shock shooting burning pain. Travels along the length of the lower limb in a band not more than 2–3cm. Can be associated with allodynia if nerve damage is present.	Can occur together with or without radiculopathy.
Radiculopathy	Results from blocked conduction along a spinal nerve.	Numbness when sensory fibres are blocked and weakness when motor fibres are blocked. Numbness is dermatomal and weakness myotomal. Can be associated with allodynia if nerve damage is present.	Defined by objective neurological signs. Can occur with or without radicular pain e.g. L5/S1 radiculopathy.
Modified from Bogduk [2009]			

Consequently, it is very important for rheumatologists to recognize when patients have mixed pain as the effective management requires a broader therapeutic approach to relieve both the nociceptive and neuropathic pain components.

Definitions and terminology

Despite the efforts of the International Association for the Study of Pain (IASP), there is still confusion amongst clinicians about the definitions of neuropathic pain, somatic referred pain, radicular pain and radiculopathy [Borestein, 2010]. Table 1 highlights the definitions of these terms with some examples.

Radicular pain is a type of neuropathic pain. It is defined as pain arising in the back and radiating into the limbs, and is caused by nerve root irritation/inflammation, mainly due to leakage of nucleus pulposus material and/or compression [Zundert *et al.* 2010].

In addition to the inflammatory reaction, changes in ion channel functioning may occur. These two processes result in a pattern of

hyperexcitability and spontaneous activity in the dorsal root ganglion (DRG) which is interpreted as pain. In addition, discharges enter the spinal cord and induce central sensitization at the synapses located in the dorsal horn.

Epidemiology

The exact prevalence of neuropathic pain is not known. Two population-based studies [Torrance *et al.* 2006; Bouhassira *et al.* 2008] from Europe reported the prevalence of pain of predominantly neuropathic origin or pain with neuropathic characteristics to be 8% and 7%, respectively. In both studies neuropathic pain was more severe than other types of pain.

A German study reported that 37% of patients with prolonged low back pain had predominantly neuropathic pain. Depression, anxiety, and sleep disorders were significantly more prevalent in patients with neuropathic pain compared with those without such pain [Freynhagen *et al.* 2006]. Common features suggestive of neuropathic pain are highlighted in Table 4.

Table 2. Causes of radicular pain.

- Disc herniation
- Spinal stenosis (e.g. due to degenerative arthritis of spine)
- Synovial cysts
- Infections
- Inflammatory conditions
- Tumours
- Vascular abnormalities

Lumbar radicular pain is the most commonly occurring neuropathic pain in the general population and will be used as the example of radicular pain in this review. The prevalence from different studies varies considerably between 1.2% and 43% [Konstantinou and Dunn, 2008]. This variation may have been due to differences in definitions, methods of data collection and perhaps populations studied.

The highest predispositional risk factors are female gender, obesity, smoking, low back pain history, stress, depression, jobs/tasks requiring long-hour standing and frequent bending, dystocia (difficult labour), heavy weight lifting and exposure of spine to vibrations [Younes *et al.* 2006].

Causes and presentation of lumbar radicular pain

Some of the causes of lumbar radicular pain are highlighted in Table 2.

Lumbar radicular pain is usually described as sharp, burning, stabbing, electric shock, compressive and penetrating pain originating from the back and radiating to the foot (along the affected nerve pathway).

If the pain is caused by the herniation of the lumbar disc, it is aggravated by bending, sitting, coughing and exerting pressure on the intervertebral disc, while it improves by lying down and, probably, walking [Younes *et al.* 2006].

In contrast, if the pain is caused by spinal canal stenosis, it worsens with walking and relieves with bending [Tarulli and Raynor, 2007]. In addition, spinal stenosis patients develop paraesthesia on the ipsilateral dermatome.

Patients suffering from chronic sciatica due to nerve root entrapment, as a result of adhesions

from a previous acute inflammation or after spinal surgery, very often complain about experiencing pain after sitting for a few minutes on a chair, or in the car while driving. These patients also report that they are in pain and 'get blocked' for a few minutes when getting up from the sitting position and that their condition improves with walking. They feel uneasy when lying on their back and have difficulty with sleeping [Papadopoulos, 2011].

Diagnosis and investigations for lumbar radicular pain

The diagnosis of neuropathic pain involves taking a careful history and conducting a thorough physical examination. Investigations when required include neuroimaging and electrophysiology studies. Figure 1 illustrates the process of diagnosing neuropathic pain.

The evaluation of low back pain to determine whether a radicular component is present requires a thorough physical examination which includes a full neurological examination. The limitations of the physical examination should be recognized as it is quite subjective and very much depends on the experience of the clinicians in picking up the signs which are sometimes quite subtle.

A Cochrane review by Van der Windt and colleagues of a wide variety of tests including straight leg raising, absent tendon reflexes or muscle weakness in 19 different studies, showed that most individual tests carried out during physical examination are not very accurate in discriminating between patients who have, or do not have a herniated disc with sciatica [Van der Windt *et al.* 2010]. Most of these studies, however, were conducted in highly selected patients who had already been referred for surgery, and only one study was carried out in a primary care population. Furthermore, the diagnostic performance of physical examination may be better when combinations of tests are used, including information from both the patient history and physical examination. This issue is important, as the earlier the likely cause of radicular pain is found and treated, the more the opportunities for improved patient outcomes.

Diagnostic testing for patients with radicular pain is done where it is considered necessary to confirm the diagnosis and to determine the aetiology. For simple cases, the use of diagnostic testing is not usually needed. However, if there is a history

Figure 1. Process of diagnosing neuropathic pain (adapted from Treede *et al.* [2008]). Permission to use figure obtained from Neurology Journal

of trauma, or other comorbidities like cancer, diabetes or an infection, diagnostic testing may need to be done earlier.

The diagnostic testing conducted for such patients include imaging such as a CT or MRI scan and electrodiagnosis such as electromyography (EMG) or nerve conduction tests. Other tests are carried out depending on the likely aetiology, for example, cerebrospinal fluid (CSF) analysis should be carried out if central nervous system (CNS) infection is suspected or radioactive bone scans if metastatic involvement of the spine is suspected [Hsu *et al.* 2011].

There are challenges in the diagnosis of patients with neuropathic pain. Challenges arise because the symptoms are diverse and could be due to multiple mechanisms. Patients often have difficulty with the communication of their symptoms and clinicians sometimes find it difficult to understand the description given by the patient. In turn, it is often difficult for the rheumatologist to explain the causes of the pain to the patient. To compound matters, there can be variable response to initial therapy.

The role of screening tools in the evaluation of a patient with lumbar radicular pain

Screening tools are easy to use by professionals and patients alike, in clinic or via telemedicine (for example, over the telephone or internet). This

makes these tools attractive because they provide immediately available information. They provide an initial assessment for the clinicians and act as pointers for the need to undertake further assessment, which may subsequently influence management decisions [Bennett *et al.* 2007].

However, the limitations of the various screening tools need to be recognized. They fail to identify about 10–20% of patients with clinician-diagnosed neuropathic pain. Consequently although these screening tools offer guidance for further diagnostic evaluation and pain management, they do not replace clinical judgment. The screening tools that are widely used include the Leeds Assessment of Neuropathic Symptoms and Signs (LANSS), Douleur Neuropathique 4 questions (DN4), the Neuropathic Pain Questionnaire (NPQ), pain DETECT, and ID Pain.

NPQ, ID Pain and pain DETECT all rely on only interview questions. Pain DETECT was validated in about 8000 patients with low back pain. LANSS and DN4 have higher diagnostic accuracies (see Table 3) as they combine clinical examination with the questionnaire. This reinforces the importance of clinical examination in the evaluation of patients with neuropathic pain. Neither LANSS nor DN4 were specifically evaluated in patients with back pain. The new tool StEP was evaluated in patients with back pain and it has >90% sensitivity and accuracy in

Table 3. Neuropathic pain screening tools: the Leeds Assessment of Neuropathic Symptoms and Signs (LANSS), Douleur neuropathique 4 questions (DN4), the Neuropathic Pain Questionnaire (NPQ), painDETECT, ID Pain and Standardized Evaluation of Pain (StEP).

	LANSS*	DN4*	NPQ	painDETECT	ID Pain	StEP*
<i>Symptoms</i>						
Pricking, tingling, pins and needles	X	X	X	X	X	X
Ongoing pain						X↓
Electric shocks or shooting	X	X	X	X	X	
Hot or burning	X	X	X	X	X	X↓
Numbness		X	X	X	X	
Pain evoked by light touching	X		X	X	X	
Painful cold or freezing pain		X	X			X↓
Temporal pattern or summation				X		X↓
<i>Clinical examination</i>						
Brush allodynia	X	X				X↓
Raised pinprick threshold	X	X				X
Raised soft touch threshold		X				X↓
Abnormal response to cold						X
Hyperalgesia						X
Abnormal response to blunt pressure						X
Straight leg raising						X
Skin changes						X↓
<i>Sensitivity</i>	85% ^a	83% ^b	66% ^c	85% ^d	-	>90%
<i>Specificity</i>	80% ^a	90% ^b	74% ^c	80% ^d	-	>90%

Source: Modified from Bennett *et al.* [2007] and Cruccu and Truini [2009]
^aBennett [2001], ^bBouhassira *et al.* [2005], ^cKrause and Backonja [2003], ^dFreynhagen *et al.* [2006]
 *Tools that involve clinical examination. ↓ Reduced score

these patients. It combines 6 interview questions and 10 physical tests [Cruccu and Truini, 2009].

The result from the study by Scholz and colleagues suggests that StEP may be the screening tool of choice in patients with low back pain (as far as we know, its use in other conditions have not been validated) [Scholz *et al.* 2009]. In addition to its diagnostic utility, StEP may also help in the development of better targeted analgesic treatment, as it helps to differentiate between the pain phenotypes in a way that is independent of the disease aetiology [Scholz *et al.* 2009].

The most commonly used pain rating scale in clinical studies is the 11-point pain intensity numerical rating scale (PI-NRS). A reduction of ~2 points or ~30% in the PI-NRS represents a clinically important difference [Farrar *et al.* 2001].

Neuro-imaging

Imaging techniques to investigate lumbar radicular pain may involve the use of plain radiograph, CT scan, MRI or CT myelograph. The plain radiograph can be used to exclude traumatic bone injury or metastatic disease [Ellenberg and Honet, 2008], but for the initial assessment, the most accurate and most informative of these imaging techniques is the MRI as it can also identify other intraspinal pathologies. In addition, the MRI is not associated with radiation and it is less invasive than the CT myelograph. Both CT and MRI will allow the visualization of the disc, spinal canal and nerve roots.

The main advantage of CT myelography, in comparison with 3-Tesla MRI, is the reliable information about the bony structures [Grams *et al.* 2009]. As there is a high incidence of abnormality in people without symptoms, it is important that

the CT and MRI findings correlate with symptoms [Ellenberg and Honet, 2008].

Electrophysiological studies

The two commonly performed electrophysiological tests are EMG and nerve conduction studies. These tests are most often considered for patients with persistent unexplained symptoms [Hsu *et al.* 211]. EMG can help with the diagnosis of patients who have inconsistent physical examination. EMG has the advantage of high specificity when compared with other imaging studies and is rarely positive in asymptomatic patients [Ellenberg and Honet, 2008].

EMG and neuroimaging studies have similar diagnostic sensitivity which tends to vary between 50% and 85% depending on the patient population [Nardin *et al.* 1999; Kuruoglu *et al.* 1994; Wilbourn and Aminoff, 1998].

Management of lumbar radicular pain

Management of lumbar radicular pain can be nonoperative or surgical. The goal for the initial treatment is to reduce inflammation and associated symptoms, and subsequently to treat the underlying cause.

Nonoperative treatment allows resolution of pain in up to 90% of cases of radicular pain [Saal *et al.* 1997]. It is the default mode of treatment for patients with lumbar disc herniation and radicular pain in the absence of a progressive neurological deficit or cauda equine syndrome.

When a patient has severe pain preventing normal activities of daily living, a short period of bed rest is recommended in the acute period. However, no data exists to suggest that bed rest will alter the natural history or improve the outcome of the condition. Owing to the possible harm to the patient, bed rest should be a short-term measure only and activities should be resumed as soon as possible.

A Cochrane review [Dahm *et al.* 2010] of 10 randomized controlled trials (RCTs) which sought to determine the effects of advice to rest in bed or to stay active for patients with acute low back pain concluded that there was moderate-quality evidence to show that patients with acute low back pain may experience small benefits in pain relief and functional improvement

from advice to stay active compared with advice to rest in bed. Patients with sciatica, however, experience little or no difference between the two approaches. Interestingly, this review also found low-quality evidence which suggested little or no difference between those who received advice to stay active and those who had exercise or physiotherapy. Despite this, patient involvement in a self-management exercise programme is to be recommended.

Bracing is another method used for immobilization of the lumbar spine. A Cochrane review [van Tulder *et al.* 2000] found very limited evidence for the use of bracing. The Cochrane review on traction in 2005 [Clarke *et al.* 2005] concluded that traction is 'probably not effective'. This was based on the finding that neither continuous nor intermittent traction was more effective for decreasing pain, disability or work absence when compared with placebo, sham or other treatments for patients with or without sciatica.

When there is acute radicular pain, it is best to wait for this to subside before initiating physical therapy. With chronic pain, however, early physical therapy is warranted. Physical therapies are used as adjunct to pharmacological treatments. Various exercises have been used including flexion and extension exercises. Other nonpharmacological modalities which are used but have weak evidence include transcutaneous electrical nerve stimulation (TENS), acupuncture and massage [Rhee *et al.* 2006].

In a review of four RCTs [Vroomen *et al.* 2000] epidural steroid injections were found to be more beneficial than the control treatment especially with respect to short-term outcome (odds ratio of 2.2). In another study [Arden *et al.* 2005] the authors found a transient advantage of this procedure over placebo using the Oswestry low back pain disability questionnaire as the primary outcome (12.5% *versus* 3.7%), but with no benefit after 6 weeks. Similarly, a more recent study showed no benefit of epidural steroid injections over saline injections at 6, 12 and 52 weeks [Iversen *et al.* 2011].

Other studies have suggested that transforaminal epidural injections may change the natural history of radiculopathy by decreasing the need for surgery. For example, in a study comparing transforaminal injection to interlaminar injections, the patients with transforaminal injection had 46%

Table 4. Definitions of common features suggestive of neuropathic pain.

Paraesthesia	An abnormal sensation, whether spontaneous or evoked
Dysesthesia	An unpleasant sensation, whether spontaneous or evoked
Hypoesthesia	Decreased sensitivity to stimulation (tactile or thermal; both are frequent)
Hyperesthesia	Increased sensitivity to stimulation (tactile or thermal; both are rare)
Hypoalgesia	Diminished pain response to a normally painful stimulus
Hyperalgesia	An increased response to a stimulus that is normally painful
Allodynia	Pain due to a stimulus that does not normally activate the nociceptive system

reduction in pain score and 10% went on to need surgery [Ellenberg and Honet, 2008]. On the other hand, patients treated with interlaminar injections had 19% reduction in pain score and 25% reduction in surgery, which indicated that short-term outcomes were better with transforaminal injections. Transforaminal injections appear to be most effective if based on MRI result.

It would seem reasonable to perform a trial of one epidural injection for the patient and subsequently re-evaluate the patient to determine whether more epidural injections are warranted. A maximum of three injections should be performed for one episode of radicular pain but can be repeated for recurrent episodes after 3–6 months.

A recent meta-analysis by Chua and colleagues reviewed six RCTs on the topic of pulse radiofrequency treatment (PRF) and found benefit in the use of PRF to the DRG in cervical radicular pain but not for lumbosacral radicular pain [Chua *et al.* 2011].

A Cochrane review [van Tulder *et al.* 2000] has shown efficacy with the use of cognitive behaviour therapy for acute low back pain but not specifically for radicular pain or radiculopathy.

Medication

Pharmacological therapies for the symptomatic treatment of lumbar radicular pain should be used in conjunction with nonpharmacological options such as physical therapy and psychological support. This involves a multidisciplinary team approach with other specialists and allied healthcare professionals. As patients have variable response to these symptomatic treatments, a risk–benefit analysis for each patient has to be considered carefully before prescribing any pharmacological agents for symptom control (Table 5

illustrates the guideline recommendations of some of these pharmacological agents).

Tricyclic antidepressants (TCAs) such as nortriptyline, amitriptyline and imipramine have shown efficacy in patients with neuropathic pain. However, not all types of neuropathic pain respond to TCAs. For example, they have not been shown to be effective in patients with chronic lumbar radicular pain, neuropathic cancer pain, chemotherapy induced pain or phantom limb pain [O'Connor and Dworkin, 2009].

A Cochrane review [Saarto and Wiffen, 2007] of 13 placebo-controlled trials that included patients with a variety of neuropathic pain conditions concluded that TCAs were more effective than placebo. From an additional 12 studies that compared one TCA with another, there was no significant difference in efficacy among TCAs. The number needed to treat (NNT) to achieve moderate pain relief was 3.6 (95% confidence interval [CI] 3–4.5) for all TCAs evaluated. The number needed to harm (NNH), defined as causing side effects that led to discontinuation of the medications, was 28 (95% CI 17–68).

There is high to moderate evidence for the treatment efficacy of duloxetine and venlafaxine compared to placebo in patients with painful diabetic neuropathy (PDN). In a Cochrane review [Lunn *et al.* 2009] comparing duloxetine with placebo in patients with PDN the NNT to achieve a 50% or 30% improvement in pain (for a 60 mg dose over 3 months) was 6 (95% CI 5–10) and 5 (95% CI 3–8), respectively. In another Cochrane review [Saarto and Wiffen, 2007], the efficacy of extended release formulation of venlafaxine was assessed in various types of neuropathic pain. The NNT to achieve moderate pain relief was found to be 3.1 (95% CI 2.2–5.1). The NNH for duloxetine was 17 (95% CI 12–50) for side effects leading to discontinuation of medication.

Table 5. Comparison of pharmacological treatment.

Class of drug	Mode of action	Main advantage	Main disadvantage	Guideline recommendation		
				NEUPSIG ^a	EFNS ^b	NICE ^c
TCA	inhibit presynaptic reuptake of serotonin and norepinephrine	Treats comorbid depression	Anticholinergic side effects	1st line	1st line for PPN, PHN and CP	1st line or 2nd line
Alpha-2-delta ligands	↓calcium influx into the neurons thereby reducing neurotransmitter release	Minimal drug interaction	Change in sensorium	1st line	1st line for PPN, PHN and CP	1st line or 2nd line
Topical lidocaine	↓discharges of small afferent nerves by blocking voltage gated Na channels	Option for patient unable to tolerate oral medications	Only effective for area applied	1st line in localized NP	1st line in small area of pain/allodynia	
SSNRIs	Serotonin and norepinephrine reuptake inhibitors	Treat comorbid depression	GI side effect	1st line	1st line for PPN	Duloxetine 1st line for PDN
Opioids (e.g. morphine and oxycodone)	Mu receptor agonist	Useful in acute situation	GI side effect, tolerance	2nd line*	2nd or 3rd line for PPN, PHN and CP	
Tramadol	Weak Mu receptor agonist. Weak serotonin and norepinephrine reuptake inhibitors	Less sedating and lower risk of abuse compared to opioids	GI side effect	2nd line*	2nd or 3rd line for PPN and CP	3rd line
Topical Capsaicin	Depletes substance P	Option for patients unable to tolerate oral medications	Skin irritation			

*Considered as first line in acute neuropathic pain, episodic exacerbations and neuropathic cancer pain.

GI, gastrointestinal; TCA, tricyclic antidepressant; SSNRI, serotonin–norepinephrine reuptake inhibitor; PPN, painful peripheral Neuropathy; PDN, painful diabetic neuropathy; PHN, postherpetic neuralgia

^a O'Connor and Dworkin, 2009

^b Attal *et al.* 2010

^c NICE, 2010

Gabapentin and pregabalin are examples of drugs in the class of calcium channel α -2-delta ligands. Gabapentin is licensed in the UK for peripheral neuropathic pain. Pregabalin is licensed in the UK for peripheral and central neuropathic pain. In a Cochrane review [Wiffen *et al.* 2005] assessing the efficacy of gabapentin (dose 900–3600 mg daily) in patients with PDN, the NNT for effective pain relief was 4.3 (95% CI 3.5–14). In another Cochrane review [Moore *et al.* 2009] assessing the efficacy of pregabalin for chronic pain, the NNT for achieving >50% improvement in pain over baseline with 600 mg/day was 3.9 (95% CI 3.1–5.1) for postherpetic neuralgia, 5.0 (95% CI 4–6.6) for PDN and 5.6 (95% CI 3.5–14) for central neuropathic pain.

Patients with localized pain who are unable to take oral medicines may benefit from topical local anaesthetic preparations, such as lidocaine, while awaiting specialist review and NeuPSIG recommends topical lidocaine as a first-line option for the treatment of localized peripheral neuropathic pain [Dworkin *et al.* 2007]. A self-adhesive patch containing capsaicin 8% is licensed for the treatment of peripheral neuropathic pain in nondiabetic patients.

Neuropathic pain may respond to opioid analgesia. RCTs have shown beneficial effects of opioids (including oxycodone and morphine) for the treatment of DPN, PHN, painful polyneuropathy and phantom limb pain [O'Connor and Dworkin, 2009]. Tramadol can also be prescribed. NeuPSIG recommends opioids as second-line medications when an adequate response is not achieved with first-line medications or as a first-line option when immediate pain relief is necessary and short-term for acute neuropathic pain, whilst the EFNS recommends opioid medications as second- or third-line options for PPN, PHN and central neuropathic pain because of limited trials assessing long-term safety and abuse potential [Attal *et al.* 2010].

Surgical management

Surgery needs to be reserved for those who will most benefit from it. It can be associated with complications and not every patient has the desired relief of symptoms postsurgery. Furthermore, conservative treatment allows resolution of radiculopathy in up to 90% [Saal *et al.* 1997]. The selection of patients needs to be considered carefully as outcome can be very good if

symptoms, physical examination and imaging are in agreement.

Surgery should be carried out urgently if there is an emergency [Ellenberg and Honet, 2008], for example when a patient presents with central disc herniation with accompanying bowel and bladder incontinence or retention and lower limb weakness. It can also be an option for patients with pain which limits functioning after an adequate trial of conservative treatment. The actual surgical procedure performed depends on the cause of radicular pain or radiculopathy.

The patients who do best with surgical treatment are those patients with single-level root involvement, those with predominantly leg pain as opposed to back pain, those patients with abnormalities on EMG findings or imaging which corresponds to their symptoms and physical examination and patients who do not have any psychological problems or secondary gain [Finneson and Cooper, 1979].

Conclusion

Patients with rheumatic disorders can have varying proportions of nociceptive, neuropathic and psychological components to their pain. This can make the evaluation and diagnosis of radicular pain difficult. In addition the patient history is often inaccurate in describing anatomical pain patterns. Physical examination and diagnostic testing improves the evaluation of these patients but have limitations.

Rheumatologists need to have a clear understanding of these limitations in order to improve the chances of reaching the correct diagnosis. There are also challenges with initiating the appropriate treatment. A multifaceted approach is recommended and this will involve physicians, allied healthcare professionals and patients. Patients should be encouraged to actively participate in self-management programmes.

Rheumatologists can and should identify radicular pain in patients with rheumatic disorders as appropriate treatment by rheumatologists of the neuropathic pain component that these patients have, is both possible and worthwhile.

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