

**Chronic Neuropathic Pain in Lumbar and Lumbosacral Spinal Disorders:
A Cross Sectional Study on 441 Patients.**Sanatan Behera¹, Tanmoy Mohanty², Gouri Shankar Patnaik³, Chitrita Behera⁴¹ M.S Ortho Associate Professor, Department of Orthopaedics, Kalinga Institute of Medical Sciences (KIMS), KIIT University, Chandrasekharpur, Bhubaneswar, Odisha, India² M.S Ortho Professor, Department of Orthopaedics, Kalinga Institute of Medical Sciences (KIMS), KIIT University, Chandrasekharpur, Bhubaneswar, Odisha, India³ M.S Ortho, Professor, Department of Orthopaedics, Narayan Medical College and Postgraduate Institute, Sasaram, Bihar, India.⁴ MBBS, Resident Medical Officer, Sankeswar Mission Hospital, Sankeswar, Belgaum, Karnataka, India

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Corresponding author: Dr Sanatan Behera

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Abstract

Introduction: Neuropathic pain is a complex, heterogeneous disorder which is prevalent world over. It is often poorly understood, under diagnosed and underrated. Though the exact mechanism involving the genesis of neuropathic pain is ill understood, nevertheless nociceptive pain and neuropathic pain often co-exist in spinal disorders. Neuropathic pain in spinal disorders remains the major anatomically plausible reported neuropathic pain. History and physical examination remains the mainstay in diagnosis, but additional questionnaires, imaging has improved the accuracy in diagnosis.

Aim: To assess the prevalence of chronic neuropathic pain in lumbar and lumbosacral spinal disorders based on history and clinical examination.

Materials and Method: This is a retrospective study comprising of 441 patients with data retrieved from outpatient medical records. It was conducted in Kalinga Institute of Medical Sciences (KIMS) from January 2000 to December 2021. The out patients record of patients aged between 20 years to 60 years with back pain and leg pain of at least 3 months duration were reviewed, and 441 patients fulfilling the inclusion and exclusion criteria, were included in the study. The data were analyzed using Microsoft Excel Software.

Result: There were 249 males and 192 females with male and female ratio being 1.29:1. The average age of the study population was 45.68 years. Two main clinical types such as Lumbar Radiculopathy 77.77% (n=343) and Lumbar Spinal Stenosis(LSS) 22.22% (n=98) were detected. Each type was further sub divided into two sub types. 33.10% (n=146) patients were found to have neurologic deficit of which 76.02% (111) was from lumbar radiculopathy group and 23.97% (35) was from LSS group. 63.49% of patients were categorized under Quebeck Task Force classification of which 28.11% had above knee and below knee pain with neurological deficit.

Conclusion: Neuropathic pain in lumbar and lumbosacral spinal disorder is common. Sciatica was the commonest mode of presentation in chronic neuropathic pain. Lumbar spinal stenosis was seen in older age group of patients as compared to patients with Lumbar radiculopathy. High index of clinical suspicion, detail history and physical examination are mandatory for achieving a proper diagnosis. Additional imaging and pain questionnaire may enhance in the diagnostic accuracy.

Key words: Radiculopathy, Neuropathic, Lumbar Spinal Stenosis, Nociceptive, Claudication, Sciatica.

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Introduction

Neuropathic pain is a major socioeconomic burden globally [1]. According to International Association for the Study of Pain (IASP), neuropathic pain is defined as pain initiated or caused by a primary lesion or dysfunction of the nervous system [2]. Neuropathic pain is not an isolated disease, but a disorder caused by multiple diseases and lesions, which manifests as a plethora of symptoms and

signs. The mechanisms underlying these different conditions are numerous and some are yet unknown.

Chronic Low Back Pain (CLBP) is complex and heterogeneous entity often poorly understood. In most of CLBP cases, the neuropathic components are under-recognised, under-treated and hence the

treatment is often very challenging. Chronic LBP with neuropathic component is considered as mixed pain syndrome with combination of nociceptive and neuropathic and mechanisms [3,4]. Nociceptive pain results from activation of nociceptors located in ligaments, muscles, joints, fascia, and tendons as a response to tissue injury or inflammation [5]. Neuropathic back pain is described as pain arising from injury or diseases directly affecting the disc, nerve roots that innervate the spine and lower limbs. Neuropathic mechanisms are widely believed to play a more important role in leg pain, whereas nociceptive mechanisms seem to play a greater role in back pain [4,6,7].

Neuropathic pain can be caused by metabolic diseases such as diabetic mellitus, infective pathology such as syphilis, herpes zoster, trigeminal neuralgia and stroke [8]. The common causes of neuropathic pain are radiculopathy due to disc herniation [9], spinal stenosis [10], or spinal cord injuries [11]. Chronic neuropathic LBP is associated with increased probability and severity of medical co morbidities, reduced quality of life, and higher health care costs, when compared with low back pain without a neuropathic component [12, 13,14,15,16].

The incidence of neuropathic pain in general population is believed to be approximately 6.9 - 10% [17, 18]. Literature survey suggests that the prevalence of neuropathic pain to be 20%-41% [4, 19]. Yamashita et al [20] reported a 53.5% frequency of neuropathic pain in spinal disorders. However, Park et al [21], Young Eun Cho et al [22] and El Sissi et al [23] reported a prevalence of 36% -55%, using LANSS scale on chronic low back patients. This wide variation in prevalence of neuropathic pain is due to the difference in methodology between studies, with reference to definition, pain assessment tools and body area assessed.

The etiology of neuropathic pain may be primary, when the pathological process involves the nervous tissue, or secondary, when the surrounding tissues are involved [18, 24]. In many cases it is difficult for the physician to distinguish the neuropathic component of pain reported by the patient, hence often missed.

Based on the level of certainty, Finnerup et al [24] and the Neuropathic Pain Special Interest Group (NeuSPIG) [3], neuropathic pain was graded into three categories such as possible, probable and definite. Possible neuropathic pain - when there is positive history related to relevant neurological lesion or disease along with the pain distribution localized to reasonable neuroanatomical region. Probable neuropathic pain - when the pain is associated with sensory signs in the same neuro-anatomically probable distribution on clinical examination. Neuropathic pain can be called definite

or confirmatory when diagnostic tests confirms a lesion or a disease of the somatosensory nervous system explaining the pain. A central component for all level of certainty requires neuro-anatomically reasonable or valuable patterns of pain/sensory symptom(s).

Clinical indicators for higher suspicion of neuropathic pain include a cluster of typical symptoms and signs [25]. History of nerve injury, abnormal pain perception as burning, crawling, pins and needles, electrical shock like feeling, and radiation of pain to lower limbs and feet enhances the suspicion of neuropathic pain. Additionally, there may or may not be subjective decreased sensation, altered reflexes and muscle power.

In chronic low back pain both nociceptive and neuropathic pain coexists. The nociceptive pain is usually sharp and rushing, and presents as stinging, tingling, numb or stabbing, and is accompanied by decreased sensitivity in the affected area. The nociceptive pain is differentiated from neuropathic pain by the absence of sensory disturbance and good response to traditional analgesics. Hence it is of paramount importance for the physician to differentiate both the components and advocate appropriate therapeutic combinations in order to achieve optimal pain reduction. A detailed history and physical examination remains the key to diagnose clinical neuropathic pain. Though the diagnostic tests including imaging such as X-rays, MRI, CT Scan, pain scales and questionnaires such as Leeds Assessment of Neuropathic Symptoms and Signs Score (LANSS), the Northwick Park Neck Pain Questionnaire (NPQ), DN4 (Douleur Neuropathique 4 Questions) questionnaire, and pain DETECT questionnaire have enhanced the diagnostic accuracy, but it has poor correlation with symptoms and the utility in clinical practice are debatable [4, 26, 27].

The aim and the objectives of the present study were to find out the pathological conditions resulting in neuropathic pain in lumbar and lumbosacral spinal disorders and to analyze the clinical presentations of neuropathic pain.

Materials and Methods:

The present study is a retrospective cross-sectional study on the prevalence of chronic neuropathic pain in lumbar and lumbo-sacral spinal disorders amongst the patients attending the orthopaedic outpatient department at Kalinga Institute of Medical Sciences (KIMS), Bhubaneswar, Odisha, India. The medical records of all outpatients who attended orthopaedic outpatient department with complaints of chronic low back pain and leg pain, from January 2020 to December 2021 were manually scanned and comprehensive data were thoroughly analyzed. The medical records of 976

outpatients were evaluated. The inclusion/exclusion criteria for the study were strictly followed and tabulated. 441 patients who fulfilled the inclusion and exclusion criteria were finally considered for this epidemiological study and the rest were excluded. The diagnostic criteria were essentially clinical and the symptoms and signs were noted and tabulated from the medical records.

The following details were specifically noted down for each patient such as

- Low back pain with its duration
- Leg pain with its duration
- Neurogenic claudication pain.
- Anatomical site of pain
 - Gluteal pain, anterior thigh pain, posterior thigh pain, leg pain and foot pain.
- Radiation of pain:
 - Above knee pain,
 - Below knee pain
 - Both above and below knee pain with neurological deficit.

The characteristics of pain like pain accompanied with tingling, and numbness, burning pain, electrifying pain and radiating leg pain worsening on sneezing, coughing, vomiting etc. were documented. The other symptoms such as bladder or bowel incontinence, weakness of foot and ankle were also noted. Additionally spinal deformity such as visible and/or palpable step, kyphosis, scoliosis and kyphoscoliosis were looked for and recorded. Besides a thorough general examination a detailed neurological examination that included light touch and pressure sensation of lower limbs; Motor examination including tone and muscle power, deep tendon reflexes, especially ankle clonus were noted down in master chart.

Physical examination specific for neuropathic pain included Straight Leg Raise Test (Lasegue's Sign)²⁸ were noted. In addition to checking perianal sensation, the physical examination such as per rectal examination specific to exclude or to confirm cauda equina syndrome if mentioned in medical records were noted down in master chart. Patients' data not having such detailed history and physical examination were excluded from the study. The clinical symptoms and signs as mentioned in inclusion criteria (Table 1) along with clinical symptoms as described by Jai Mistry et al [25], and James A Berry et al [29], for lumbar radiculopathy were followed in this study. Similarly for Lumbar Spinal Stenosis (LSS), we followed the clinical

criteria laid by Chad Cook et al [30], comprising bilateral symptoms of leg pain, leg pain more than back pain, pain during walking/standing and age more than 48 years, and criteria laid down by Jamie A Alvaner et al [31].

Statistical Analysis:

The data were analysed by Microsoft Excel Software. As this was a cross sectional and analytical study, no statistical correlation was required and hence not highlighted.

Results:

In this study, there were 441 patients with 249 (56.46%) males and 192 (33.54%) females with male-female ratio of 1.29:1. The average age of the study population was 45.68 years with minimal to no difference in genders (M-46.17 years and F-45.05 years). The study population were categorised into two groups i.e. Radiculopathy group with 343 (77.77%) patients and Lumbar Spinal Stenosis (LSS) group with 98 (22.22%) patients (Table 2). The average age of LSS group was higher (53.16 years) than radiculopathy group (43.84 years). The average BMI of the study population was 26.06 (Radiculopathy 25.74, LSS 27.18) (Table 2). 33.10% (146) of total study population had neurologic deficit, of which 76.02% (111) patients were from radiculopathy group and 23.97% (35) patients were from LSS group (Table 2,3). The average duration of low back pain in the study population was 23.56 months and the average duration of the leg pain was 9 months. Out of 441 patients, 47.39% (209) patients presented with sciatica as the commonest presentation (Table 4). It was more in radiculopathy (184 patients, 41.72%) group than in LSS group (25 patients, 5.66%). Of the 146 (33.10%) patients who had neurological deficit, 64.38% (94) cases had positive SLR; but 35.61% (52) cases had negative SLR (Table 3). Similarly, out of 295 (66.89%) patients who had normal neurology, 43.05% (127) patients had positive SLR, and 56.94% (168) patients had negative SLR. 55.47% (81) patients out of the 146 patients had both sensory and motor weakness in this study (Table 3). Sciatica was the commonest mode of presentation in the entire study population and also in both Radiculopathy group and LSS group (Table 4). Out of 441 patients only 63.49% (n=280) were classified under Quebec Task Force (QTF) classification system of which 28.11% (124) belonged to QTF type 4 and the least being QTF type 2 with 08.61% (38) (Table 5).

Table 1: Inclusion and Exclusion Criteria

<ul style="list-style-type: none"> Inclusion Criteria Patients’ age: 20 years to 60 years Low back pain and Lower limb pain duration of minimum of 3 months or more. <u>History</u> Gluteal pain/thigh pain/leg pain, numbness/burning/tingling/ Electrifying pain/ radiation of pain to back of thigh to leg/foot. Pain getting aggravated on walking, sneezing, coughing, vomiting. Neurogenic claudication pain <u>Clinical signs:</u> Decreased or absent sensation in lower limbs. Decreased perianal sensation. Decreased or absent muscle power. Positive Straight Leg Raise (SLR) Test (Lasegue’s Sign) Positive reverse SLR test and decreased anal sphincter tone. 	<ul style="list-style-type: none"> Exclusion Criteria Patients’ age less than 20 and more than 60 years Previous spine surgery Known spinal disorders, deformity Concomitant cervical spine pathology Hip pathology Vertebral pathology (tumour, infection, fracture). Inflammatory/autoimmune pathology causing back pain. Pregnant women Patient(s)Not willing to participate
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Table 2: Demographic profile

n=441	M	F	Average Age(years)	Category	n=441	Average BMI
Radiculopathy 343 (77.77%)	n-198 (57.72%)	n=145 (42.27%)	43.84	Radiculopathy with deficit	n-111 (32.36%)	25.74
				Radiculopathy without deficit	n=232 (67.63%)	
Lumbar Spinal Stenosis (LSS) 98 (22.22%)	n=51 (52.04%)	n=47 (47.95%)	53.16	Lumbar Spinal Stenosis(LSS) with deficit	35 (35.71%)	27.18
				Lumbar Spinal Stenosis(LSS) without deficit	n=63 (64.28%)	

Table 3 Neurology status, Straight Leg Raise (SLR) Test

Total Neuropathic pain n=441	Neurologic Deficit n=146, (33.10%)	SLR<60	SLR>60	SLR Negative	Sensory Deficit only	Muscle Power Deficit only	Sensory +Muscle Power deficit
Radiculopathy (n=343)	n=111 (32.36%)	n=63 (56.75%)	n=13 (11.71%)	n=35 (31.53%)	n=14 (12.61%)	n=43 (38.73)	n=54 (48.64%)
Lumbar Spinal Stenosis (LSS) (n=98)	n=35 (35.71%)	n=17 (48.57%)	n=1 (2.85%)	n=17 (48.57%)	n=1 (2.85%)	n=7 (20%)	n=27 (77.14%)
Radiculopathy (n=343)	Normal neurology n=232 (67.63%)	n=71 (30.60%)	n=40 (17.24)	n=121 (52.15%)	Nil	nil	Nil
Lumbar Spinal Stenosis (LSS) (n=98)	Normal neurology n=63 (64.28%)	n=8 (12.69%)	n=8 (12.69%)	n=47 (74.60%)	Nil	nil	Nil

Table 4: Clinical presentations (Symptomatology)

	Sciatica	Burning	Numbness	Tingling	Only Pain
n=441	47.39% (n=209)	21.54% (n=95)	11.56% (n=51)	12.24% (n=54)	7.25% (n=32)
Lumbar Radiculopathy (n=343)	53.64% (n=184)	18.36% (n=63)	10.49% (n=36)	10.20% (n=35)	7.28% (n=25)
Lumbar Spinal Stenosis(LSS) (n=98)	25.51% (n=25)	32.65% (n=32)	15.30% (n=15)	19.38% (n=19)	7.14% (n=7)

Table 5: Neuropathic Low Back Pain on Quebec Task Force Classification and Neurological status

Quebec Task Force classification			Neurological Status		
	n	%			%
LBP and pain above Knee	38	08.61%	Pain above knee with deficit	03	00.68%
			Pain above knee with no deficit	35	07.93%
LBP and Pain below knee	118	26.75%	Pain below knee with deficit	19	04.30%
			Pain below knee with no deficit	99	22.44%
LBP and pain above and below the knee with neurological involvement	124	28.11%	Pain whole lower limb with deficit	124	28.11%
			Pain whole lower limb with no deficit	161	36.50%
Total	280	63.49%		441	100%

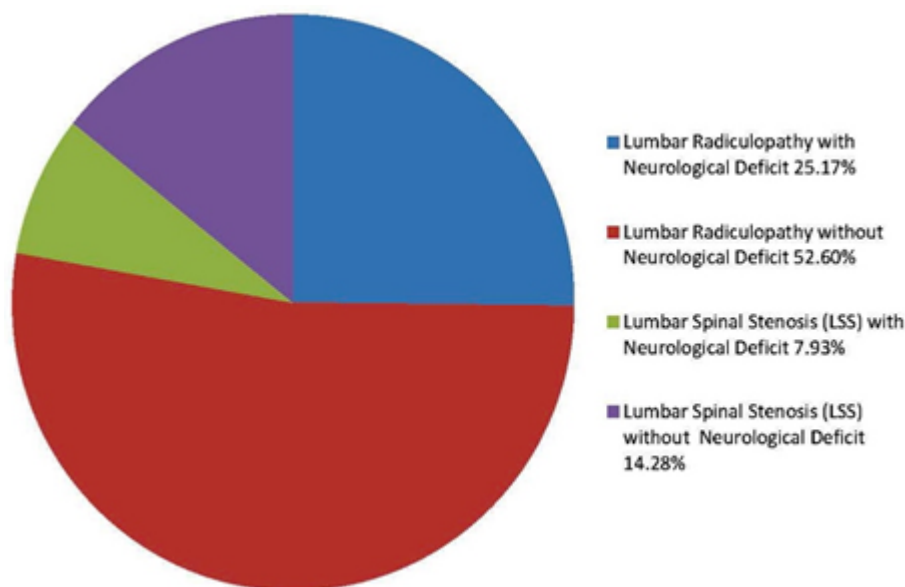


Figure 1: Percentage Prevalence of Neuropathic Pain

Discussion:

Neuropathic pain can be classified into “local neuropathic pain” when the pathological mechanism is caused by lesions of the nociceptive sprouts within the degenerated disc, “inflammatory neuropathic root pain” when the pathological mechanism is caused by inflammatory mediators originating from the degenerative disc or “mechanical neuropathic pain” when the pathology is due to mechanical

compression of the root [4]. The neuropathic pain can also be classified as “primary” when the pathological process involves the nervous tissue or “secondary” when the surrounding tissues are involved [18, 24]. It is also well known that nociceptive pain and neuropathic pain components do coexist in chronic low back pain. Due to this complex pathomechanism, and coexistence of nociceptive and neuropathic components, it often

poses a serious challenge for a surgeon or a pain physician to distinguish neuropathic pain from inflammatory or nociceptive pain [32]. This may also be due to multiple factors, including obscurity in definition of neuropathic pain, the wider variation and exposition of patients' pain sensations, various dynamics of pain progression, and the lack of an obvious clinical test to assist the diagnosis [10].

In this present study primarily two pathological conditions were attributable to neuropathic pain. These were Lumbar Radiculopathy and Lumbar Spinal Stenosis (LSS). Each of them may be associated with or without neurological deficit. In this study, the prevalence of neuropathic pain was 45.18% considering 441 patients were analyzed in a population of 976 patients. The percentage prevalence (45.18%) of neuropathic pain in this study was higher than O. van Hecke et al [17], and Muniron B P et al [18], Hassan AE et al [19], and lower than Yasmashita et al [20], and El Sissi W et al [23]. However our study could not be compared to all these studies as our study was based on history and physical examination alone.

Demographic profile (Table 2, Fig 1)

There were 441 patients (male 249 and female 192), with male female ratio of 1.29:1 in this study. The average age of patients' of the entire study population was 45.68 years with no difference between both the genders (M 46.17 years, F 45.05 years). The average age of patients in LSS group was higher than radiculopathy group (53.16 years Vs 43.84 years). There was no age differences between male and female genders in either groups, but the average age of both male and female in LSS group exhibited a higher average age than radiculopathy group. The average age of men in our study population of radiculopathy was similar to study done by Andrew W. Tarulli, Elizabeth M. Raynor et al⁹ but age of onset of symptoms in females was lesser as compared to their study. Patients with lumbar radiculopathy amounts to 77.77% (n=343) and LSS group amounts to 2.22% (n=98) of all diagnosed with neuropathic pain. The average BMI was comparable for both the groups (Radiculopathy group 25.74 and 27.18 for LSS group).

Clinical presentation and Symptomatology (Table 4)

The average duration of low back pain in the study population was 23.56 months, the average duration of bilateral leg pain was higher with 14.80 months, and the right leg pain and left leg pain were 8.35 months and 8.11 months respectively. The bilateral leg pain was mostly seen in lumbar canal stenosis group of patients. Sciatica was the commonest mode of presentation among patients in this study, which amounts to 47.39% (n=209) of the patients diagnosed with neuropathic pain. This was followed

by burning pain with 21.54%, tingling with 12.24% (n=54) and the least being numbness with 11.56% (51). Additionally in our study, we found 32 patients which amounts to 7.25% of our study population presented just pain as non radiating pain without any additional features such as sciatica, numbness, burning or tingling pain.

Stephen et al [33] in their study on 68 lumbar canal stenosis cases confirmed that, pseudoclaudication was the commonest symptom (94%) and was described by patients as pain (93%), numbness (63%), or weakness (43%). Symptoms were frequently bilateral (68%). Neurogenic claudication pain was seen both lumbar radiculopathy and LSS group (56.46%, n=249), but it was more commonly seen in patients with LSS (73.46%, n=72) than in patients with lumbar radiculopathy (51.60%, n=177).

Neurological status and deficit and Straight Leg Raise Test (SLRT) (Table 3)

In this study, there were 146 patients with neurological deficit which amounts to 33.10% of all patients diagnosed with neuropathic pain. Of 146 patients, 76.02% (n=111) were from radiculopathy group and 23.97% (n=35) cases were from LSS group. We observed three types of neurological deficit which were seen in both lumbar radiculopathy and LSS group; sensory deficit only, muscle power deficit only, and combined sensory and muscle power deficit. 10.27% (n=15) had sensory deficit, 34.24% (n=50) had muscle power deficit only, and 55.47% (n= 81), being combined sensory and muscle power deficit; the highest neurologic deficit category in this study. On the contrary out of 441 patients, 67.63% (n=232) of patients from radiculopathy group and 14.28% (n=63) from LSS group were without neurological deficit.

Straight Leg Raise (SLR) test [28] has been one of the commonest test methods to determine compressive radiculopathy, though the sensitivity (0.52) and specificity (0.89) is different than Slump test [34]. However, occurrence of leg pain with respect to the extent (degree) of hip flexion is controversial. Some authors believed SLR to be positive if the leg pain appears between 30° to 60° of hip flexion, while others believed it to be in between 30° to 70° [35, 36]. We have considered SLR as one of the diagnostic test criteria for neuropathic pain and if it is positive between 30° to 60° of hip flexion. In our data analysis we found both positive and negative SLR in patients with and without neurological deficit. In this study 50.11% (n=221) patients exhibited positive SLR, of which 42.53 % (n=94) seen in patients with neurological deficit and the rest is 57.46% (n=127) is seen in patients with normal neurology. On the contrary 49.88% (n=220) patients exhibited negative SLR of which 23.63% (n=52) patients had neurological deficit and 76.36%

(n=168)) patients with normal neurology. Considering SLR at 60°, 50.31% (n=80) patients demonstrated SLR positive at 60° in neurology deficit group as compared to 49.68% (n=79) patients with normal neurology (Table 3). The disparity between positive or negative SLR with respect to neurology could be explained by Boyd BS et al [37] and Pesonen J et al [38] that, radiological detection of nerve root compression does not always correlate with a positive SLR or clinical symptoms.

Lumbosacral radiculopathy, otherwise referred to as sciatica, is a pain syndrome manifests as radiating pain along the lower limb which follows a definite lumbar nerve distribution, that may include sensory or motor disturbances [9]. The pathomechanism responsible for radiculopathy is most commonly due to compression or irritation of nerve roots in lower back and the primary pathological entities responsible for lumbosacral radiculopathy are intervertebral disc prolapse, degeneration of vertebrae and intervertebral disc spaces and thickening of ligamentum flavum leading to narrowing of neural foramen³⁵. The other pathologies are spondylolisthesis, nerve sheath tumours. Common symptoms of radiculopathy are, low back which radiates to lower extremities in a dermatomal pattern, weakness, loss of reflexes [39]. However, absence of symptoms does not exclude radiculopathy always [37,40,41]. The prevalence of lumbosacral radiculopathy is approximately 3% to 1.6% to 13.4%, distributed equally in both genders or with more male preponderances in some literature [9,42,43]. Women develop symptoms between 50 to 60 years than men in their 40s [9,41]. The degenerative spinal pathology is the principal predisposing factor of lumbar radiculopathy. Lumbar radiculopathy is the commonest cause of neuropathic pain in patients with back related pain [4].

Radicular pain is defined as pain radiating along the nerve root with the specific dermatomal area, and gets aggravated on coughing, sneezing and vomiting etc. According to Task Force on Taxonomy of the International Association for the Study of Pain, radiculopathy is defined as “objective loss of sensory and/or motor functions as a result of damage to the nerve root and can occur with or without associated pain [39]”. Radiculopathy and radicular pain often coexist, and may be as a result of the same pathology; however they may also exist in isolation. Painful radiculopathy is defined as a clinical state, where radiculopathy associated with pain. It is also defined as objective loss of sensory and/or motor function as a result of conduction block in axons of a spinal nerve or its roots [40]. As per proposed neuropathic pain grading system developed by the Special Interest Group on Neuropathic Pain (NeuPSIG), painful radiculopathy can be further

classified as definite neuropathic pain when the diagnosis is based on sensory signs, and probable neuropathic pain, if it is based only on motor signs [24]. In the present study 33.10% (n=146) had painful radiculopathy of which 3.4% (n=15) had sensory deficit alone and 11.33% (n=50) had motor deficit alone and 18.36% (n=81) had both sensory and motor deficit (Table 3).

Neuropathic Low Back Pain on Quebec Task Force Classification and Neurological status Table No 5

According to Quebec Task Force [32] on spinal pain patients with Low Back Pain (LBP) are classified into 11 subgroups of which first four are based on pain location and the presence or absence of neurological signs, radiological imaging and surgical history; 1) LBP only, 2) LBP and pain above knee, 3) LBP and pain below knee, 4) LBP with pain above and below the knee and signs of nerve root involvement. In this study we have considered and analyzed 2nd to 4th groups only. There were 38 (8.61%) patients with pain above knee, 118 (26.75%), pain below knee and 124 (28.11%) patients with pain above and below the knee with neurological deficit (Table 4). In contrast we had 161 (36.50%) patients with pain above and below knee pain but with normal neurology. Similarly there were 99 (22.44%) patients with pain below knee and with normal neurology. Hence it can be concluded that patients with whole limb pain with neurological deficit definitely needs specific investigation and treatment and patients with whole limb pain but with normal neurology, needs further clinical assessment and investigation based on the severity of symptoms. S J Atlas et al [44] had shown that, patients with higher Quebec Task force grade (2 to 6) are associated with increase severity of symptoms, increase chance of surgical requirement.

Lumbar spinal stenosis (LSS) was first described by Sachs and Frankel way back in 1900 and the clinical description was defined in 1954. LSS refers to a pathological condition in spine with narrowing of central canal or lateral recess or both, and it may present in isolation with or without disc bulge, disc herniation and can be associated with scoliosis or degenerative scoliosis [45]. Jamie A et al⁴⁵ have described the sequential clinical manifestation of LSS starting with low back pain, leg pain, leg fatigue, numbness, leading to buttock pain, bilateral leg pain, neurogenic claudication pain, sensory and/or motor weakness along with forward stoop gait in late stages. Intermittent neurogenic claudication also referred to as pseudoclaudication, is the most common clinical presentation of lumbar spinal stenosis (LSS); manifested as chronic non radicular leg pain fatigue, numbness and weakness that significantly compromises the ability to ambulate [33,46].

Chad Cook et al³⁰ used clusters of patients symptoms and observational findings such as 1) bilateral symptoms; 2) leg pain more than back pain; 3) pain during walking/standing; 4) pain relief upon sitting; and 5) age >48 years, as diagnostic support tool for Lumbar canal stenosis. The similar diagnostic criteria were used in our study, except that we had not included patients above 60 years. In this study there were 98 patients with LSS which constitute 22.22% of the study population and the overall percentage prevalence was 10.04% when analyzed on 976 out patients. According to Chad Cook et al criteria, 100% (n=98) patients had leg pain more than back pain, and all patients experienced bilateral lower limb pain. We had 80 patients with age above 48 years which constitute to 81.63% of LSS patients. 18 patients were below 48 years of age, 5 patients were between 20 to 30 years, 6 patients were between 31 to 40 years and 7 patients were between 41 to 48 years of age. This definitely implies that very young patients exhibiting classical symptoms of LSS might have large intervertebral disc prolapse, and patients between 41 to 48 years need MRI scans to ascertain LSS. The population based study in Japan revealed variable prevalence of LSS approximately 10.3% to 11.2% and it increases with age^{47,48}. Similar to this study in Japan the present study revealed the percentage prevalence of 10.04%.

Limitation(S):

This study had a few limitations. Firstly, this was a retrospective study, based on clinical history and clinical signs only and no pain scale or questionnaire were used. Secondly, this study population was less.

Conclusion(S):

Lumbar radiculopathy was the most common presentation of chronic neuropathic pain syndrome. Neurologic deficit was more commonly seen in lumbar radiculopathy than lumbar canal stenosis. Additional diagnostic tests such as plain and dynamic spine x rays and Magnetic Resonance Imaging (MRI), pain questionnaire may enhance the diagnostic accuracy and differentiate types of pathology leading to chronic neuropathic pain.

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