Original Article

Non discogenic lumbar radiculopathy ((A study of 104 cases))

Ali T. AbdulWahid* **FIBMS**

Abstract:

Background: All though the most common etiology of lumbar radiculopathy is herniated disc or spinal stenosis, however there are several intraspinal or extra spinal pathogenic processes that may cause lumbar radiculopathy.

Objective: To assess how often, and review the pathologies that cause non discogenic lumbar radiculopathy.

Patients and Methods: A prospective study was conducted on 600 patients who had lumbar radiculopathy. During one year period we examined 600 patients in outpatient clinic with presumed diagnosis of lumbar disc herniation.Through history and comprehensive physical and neurological examination were performed for all patients. Diagnostic test were done including laboratory, electrophysiological and radiological assessments. in this study Patients with non discogenic lumbar radiculopathy, were refereed patients to other specialist to deal with cases.

Results: There were 104 patients (17%) with non discogenic lumbar radiculopathy out of 600 patients presented with lumbar radiculopathy. There were peripheral neuropathy in 28.8%, peripheral vascular diseases in 19.25%, osteoarthritis or osteonecrosis of hip joint in 19.25%, extra spinal tumors in 14.5% of patients ,osteodiscitis in 11.5%, entrapment neuropathy in 6.5% of the patients.

Conclusions: The most common causes of lumbar radiculopathy are herniated disc but there are 17% with non discogenic lumbar radiculopathy with broad list of pathologies.

Key Words: discogenic, lumbar, radiculopathy, nondiscogenic, spine.

Fac Med Baghdad 2016; Vol.58, No.3
Received:Apirl,2016
Accepted:June.2016

Introduction:

Lumbar radiculopathy (L.R) means pain in the back or gluteal area radiating down to the leg in a dermatomal distribution. (1) The prevalence of true L.R in the general population is about 3% to 5 %.(1,2) Although the most common causes of this presentations are herniated disc or spinal stenosis, many other causes mimicked lumbar radiculopathy (L.R) including peripheral neuropathy, hip and pelvis pathology, vascular, traumatic, infectious, entrapment neuropathy and iatrogenic causes.(3,4,5).

A symptomatic lumbar disc herniation or bulge is a common finding in MRI, so the presence of such changes must be correlated with the patient symptoms and signs.(3) If the diagnosis of L.R is presumed, this action may result in misdiagnosis, unnessary tests and treatment , ultimately and delay of appropriate care.(2,3) These issues highlight the importance of the clinician to think and work from a broad list of differential diagnosis, especially when the symptoms and signs are atypical for radicular pain.(4,5,6,7).

Intraspinal or extraspinal pathogenic processes along the course of sciatic nerve may causes backache and lumbar radiculopathy L.R .(7,8,9,10) Lumbar spine imaging reveals the causes of intraspinal non discogenic L.R , where extraspinal L.R is often misdiagnosed because routine diagnostic test focus on the lumbar spine.(11,12,13,14)Extrapelvic causes affect the sciatic nerve as it emerge distally from the sciatic notch.(15,16,17) A delicate history with proper physical examination and further diagnostic imaging are important in clarifying the correct diagnosis.(18,19,20) In malignant causes of plexopathies, the ache onset is usually insidious, and the pain pattern is one of major factors suggesting a non- discogenic causes of sciatic radiculopathy (21,22,23).

*Dept. of surgery, Medical College, Baghdad University.
azdh-1978@yahoo.com

Patients and methods:

During one year period from Jan.2014 to Jan. 2015 we reviewed prospectively 600 patients presented with lumbar radiculopathy in medical city – Baghdad. All patients were examined in outpatient clinic including detailed history and comprehensive physical examination followed by laboratory, radiological and electromyography (E.M.G) studies.

Imaging included plain X-Ray of lumbar spine, pelvis, hip joint, and chest, ultrasound of the abdomen and pelvis, M.R.I of lumbar spine.

Laboratory tests included blood test, ESR, biochemical, serological and virological tests.

86 patients had lumbar discectomy out of 496 patients with discogenic L.R who were excluded from the study. Inclusion criteria were 104 cases out of 600 who were diagnosed as non discogenic L.R.

All cases with a diagnosis of non discogenic L.R were referred to other specialist like orthopedic, vascular, general surgery and neurology.

Results:

There were 104 patients (17%) had non discogenic L.R out of 600 cases who presented with L. R during one year period.

Table 1 : gender distribution in non discogenic L.R

	male	female
Nondiscogenic L.R	**68(65, 3%)**	**36(34, 7%)**

Age of patients ranged from 25 y. to 60y, including 68(65, 3%) male and 36 (34, 7%) female. 86 patients (15%) had lumbar disorder out of 496 cases with discogenic L.R treated surgically while 410 patients (85%) received non surgical management with good results.

Table2: incidence of discogenic and nondiscogenic L.R

	discogenic L.R	Nondiscogenic L.R
600 PATIENTS	**496 (83%)**	**104 (17%)**

From 104(17%) cases of nondiscogenic L.R, 30 patients (28. 8%) had peripheral neuropathy Guillain- Barre syndrome, diabetic neuropathy, and 20 patients (19.2%) had peripheral vascular disorders.

In this study pelvic, hip, and upper femur pathologies were diagnosed in 20 patients (19.2%) like osteoarthritis of hip joint, osteonecrosis of femoral head and sacroiliac joint lesions.

Table 3: Causes of nondiscogenic lumbar radiculopathy

Peripheral neuropathy	**30 (28.8%)**
Peripheral vascular disorders	**20 (19.2%)**
Pelvic ,hip ,and femur pathology	**20 (19.2%)**
Extraspinal tumor	**15 (14.5%)**
Infections	**12 (11.5%)**
Entrapment neuropathy	**7 (6.5%)**

Extraspinal tumor were diagnosed in 15 patients (14.5%) like two cases osteogenic sarcoma of upper femur, two cases with schwannoma of the lumbosacral plexus, two cases with malignant peripheral nerve sheath tumor of the sciatic nerve at the sciatic notch, one case with liposarcoma of upper thigh, two cases of chondrosarcoma of iliac bone, and six patients had L.R due to complication of chemotherapy and radiotherapy for malignancy. Infections were included 12 cases (11.5%) like discitis, epidural abscess with or without osteomyelitis of lumbar vertebra. Seven patients (6.5%) presented with entrapment neuropathy of lower limb like common peroneal neuropathy in 4 cases and 3 cases with compression of the lateral femoral cutenous nerve of thigh.

Discussion:

Lumbar radiculopathy is a common symptom causes by intraspinal or extraspinal pathologies processes along the lumbar nerve root and /or sciatic nerve. (1)

The most frequent intraspinal disease causing L.R. are herniated disc or spinal stenosis in (83%) (4), as a confirmed in this study were (85%).

In (20%) of case of sciatic pain both discogenic and nondiscogenic in origin presented at same time but in this study no such cases founded. (4, 5)

Extraspinal causes of L.R. were misdiagnosed because diagnostic test focus on lumbar spine which agree with this study. (14, 15, 16)

In this paper 104 patients 17% were diagnosed nondiscogenic L.R. and two most common group of nondiscogenic L.R. were peripheral neuropathy (28.8%) and peripheral vascular disease in (19.2%) which compatible with previous studies by Lipetz JS and Jeon CH,Han SH. (10,11,12) Musculoskeletal disease around the pelvis, hip joint and upper femur like osteoarthritis of hip joint, necrosis of femur head and sacroiliac joint lesion are not uncommon causes of nondiscogenic L.R. (7, 13, 14) and were diagnosed in 20 patients in this series (29.2%). Also osteomyelitis ,osteodiscitis and epidural abscess were diagnosed in 12 patients(11.5%). Infectious etiologies should be considered in different diagnosis of L.R. mostly in diabetic and immunocompromized patients. (15, 16, 17) Entrapment neuropathy like common peroneal nerve neuropathy and compressed of the lateral cutenous nerve of thigh were studies in the studies causes L.R. (18, 19, 20, 21) Jeon CH et al and were presented in 7 cases (6.53%) in this paper. Extraspinal tumors were founded in 15 patients (14.5%) in this series like osteogenic carcinoma of the upper femur, chondrosarcoma of the pelvis, malignant peripheral nerve sheath tumor of sciatic nerve at greater sciatic notch, liposarcoma of the upper thigh and schwanomma of the lumbosacral plexus so high index of suspicions is required to rule out these pathologies causing L.R. (22,23,24,25) Pelvic and femoral pathogenesis can coexist with lumbar disc herniation like intrapelvic tumors, psoas abscess, hematoma, endometrioses, tuber ovarian, gluteal abscess, trochanteric bursitis and piriformis syndrome (25,26,27,28) in this study no pelvic or femoral pathologies coexist with lumbar disc herniation.

Conclusions:

The most common causes of lumbar radiculopathy are herniated disc but it is not the only one, however there is abroad list of differential diagnosis os nondiscogenic lumbar radiculopathy in 17% of the cases. The pathologies of nondiscogenic L.R. in

the study were in order of frequency:

Peripheral neuropathy (28.8%), peripheral vascular diseases (19.2%), infectious (11.5%), hip, pelvis and upper femur lesions (19.2%), entrapment neuropathy (6.5%) and extraspinal tumors (14.5%) respectively.

Those mimickers of lumbar radiculopathy can be diagnosed by detailed history,proper physical examination and appropriate diagnostic tests to avoid misdiagnosis, unnecessary investigations and treatment with ultimately a delay in delivery of appropriate care.

References:

1. Traulli AW,Raynor EM: LUumbosacral radiculopathy. Neurol Clin 2007; 25(2):387-405.

2. Jensen MC, Brant-Zawadzki MN, Obuchowski N, Modic MT, Malkasian D, Ross JS: Magnetic resonance imaging of lumbar spine in people without back pain. N Engl J Med 1994; 331(2):69-73.

3. Boden SD, Davis DO, Dina TS, Patronas NJ, and Wiesel SW: Abnormal magnatic-resonance scans of the lumbar spine in asymptomatic subjects: A prospective investigation. J Bone Joint Surg Am 1990:72(3):403-408.

4. Dudeney S, O Farrell D, Bouchier-Hayes D, et al. Extraspinal causes of sciatica: a case report. Spine 1998; 23:494-6. {IVSL, high wire}.

5. Yoshimoto M, Kawaguchi S, Takebayashi T, Isogai S, Kurata Y,Nonaka S, et al. Diagnostic features of sciatica without lumbar nerve root compression. J Spinal Disord Tech 2008; 22:328-33.

6. Kulcu DG, Naderi S. Differential diagnosis of intraspinal and extraspinal non-discogenic sciatica.J Clin Neurosci 2008; 15:1246-52.

7. SwezeyRL. Over diagnosed sciatica and stenosis, under diagnosed hip arthritis. Orthopedics 2003; 26(2):173-174, discussion 174.

8. Ortolan EG,Sola CA, Gruenberg MF, et al. Giant sacral schwannoma. A case report. Spine 1996; 21:522-6.

9. Akay KM, Ersahin Y, Cakir Y, Tethered cord syndrome in adults. Acta Neurochir (Wien) 2000; 142:1111-5.

10. Naderi S, Yucesoy K, Aksan O, et al. Epidural brucella abscess. Report of a spinal brucellosis manifesting itself with epidural abscess. Neuro-orthopedics 2000; 28:11-5. {IVSL, high wire}.

11. Harney D, Patijii J: Meralgia paresthetica:Diagnosis and management strategies. Pain Med 2007; 8(8):669-677.

12. Nouraei SA, Anand B, Spink G, O'Neill KS: Anovel approach to the diagnosis and management of meralgia paresthetica. Neurosurgery 2007; 60(4):696-700.

13. Chen WS, Chronic sciatica caused by tuberculous sacroiliitis. A case report. Spine 1995; 20:1194-6.

14. Brown MD, Gomez-Marin O, Brookfield KF, et al. Differential diagnosis of hip disease versus spine disease. Clin Orthop Relat Res 2004; 419:280-4.

15. Carragee EJ: Pyogenic vertebral osteomyelitis. J Bone Joint Surg Am 1997; 79(6):874-880.

16. Skaf GS, Domloj NT, Fehlings MG, et al: Pyogenic spondylodiscitis: An overview. J infect public health 2010;3(1):5-16.

17. Tang HJ, Lin HJ, Liu YC, Li CM: Spinal epidural abscess: Experience with 46 patients and evolution of prognostic factors. J Infect 2002; 45(2):76-81.

18. Kim JY, Ihn YK, Kim JS, Chun KA, Sung MS, Cho KH: Non-traumatic peroneal nerve palsy:MRI findings. Clin Radiol 2007:62(1):58-64.

19. Jeon CH, Chung NS, Lee YS, Son KH, Kim JH: Assessment of hip abductor power in patients with foot drop: A simple and useful test to differentiate lumbar radiculopathy and peroneal neuropathy Spine (phila Pa 1976) 2013:38(3):257-263.

20. Flanigan RM, DiGiovanni BF: Peripheral nerve entrapments of the lower leg, ankle, and foot. Foot Ankle Clin 2011; 16(2):255-274.

21. Dias Filho LC, Valenca MM, Guimaraes Filho FA, et al: Lateral femoral cutenous neuralgia:An anatomical insight. Clin Anat 2003:16(4):309-316.

22. Louis DN, Ohgaki H, Wiestler OD, Cavenee WK, WHO classification of tumors of the central nervous system. 3rd wdn. L yon, France: International Agency for research on cancer: 2007.

23. Savva E, Vargas MI, Beaulieu JY, Truffert A, Burkhardt K; Lobrinus JA, et al. Giant plexiform neurofibroma in neurofibromatosis type 1. Arch Neurol 2010; 67:356-7.

24. Walcott BP, Coumans JV, KT:Diagnostic pitfalls in spine surgery: Neurosurg Focus 2011;31(4):E1.

25. Kralick F, Koenigsberg R, Sciatica in a patient with unusual peripheral nerve sheath tumors. Surg Neurol 2006; 66:634-7.

26. Koga K, Osuga Y, Harada M, et al. Sciatic endometriosis diagnosed by computerized tomography-guided biopsy and CD10 immunohistochemical staining. Fertil Steril 2005; 84:1508.

27. Andrews DW, Friedman NB, Heier L, et al Tuboovarian abscess presenting as sciatic pain: case report. Neurosurgery 1987; 21:100-3.

28. Jankiewicz JJ, Hennrikus WL, Houkom JA, The appearance of the piriformis muscle syndrome in computed tomography and magnetic resonance imaging. A case report and review of the literature. Clin Orthop Relat Rws 1991; 262:205-9.