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Clinico-epidemiological profile of lower lumbar disc herniation patients undergoing microlumbar discectomy

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Abstract
Introduction: The clinical presentations of lumbosacral radiculopathy vary according the level of nerve root or roots involved. Lumbar Discectomy is very commonly performed for this. We aimed to study the clinico-epidemiological profile of the patients who presented to our hospital with low back pain, were diagnosed with lumbar disc herniation and were operated with micro-lumbar discectomy.
Methodology: The study was designed and performed in the Department of Orthopedics, Lokmanya Hospital Chinchwad and Lokmanya Hospital Nigdi, Pune from August 2002 till May 2004. After approval of the institutional ethics committee, we included patients who were admitted and operated for lumbar disc herniation with microlumbar disc surgery. We collected personal, demographical, clinical history and clinical examination findings of the patients. The data was compiled and analysed descriptively using Epi Info software. The frequency tables were prepared and percentages were calculated.
Results: We included 24 patients, 15 patients were males, average age was 45.85 years. L4-L5 was the most commonly involved level of disc involved in our patient population. Radiation of pain towards the right was more commonly seen then left. Majority of the patients had duration of symptoms between 2 to 6 months (42%). 7 patients had sensory distribution of neurological symptoms, 4 had motor and reflex distribution of symptoms each.
Conclusions: Understanding the clinical and epidemiological profile of patients with disc herniation can help us in identifying candidates for microdiscectomy and better outcomes as a result.

Keywords: Back pain, disc herniation, microdiscectomy, epidemiological

Introduction
Low back pain with or without pain in the lower extremities has been reported to affect up to 80% of the people at some time during their lifetimes, to an extent that they are unable to work at their original occupation [1]. However, approximately 60% of the patients are back to work within one week, and only 10% suffer disabling back pain after six weeks [2]. Although data are limited, the estimated lifetime prevalence is approximately 3 to 5% for adults, with equal rates among men and women [3]. The clinical presentations of lumbosacral radiculopathy vary according the level of nerve root or roots involved. The most frequent are the L5 and S1 radiculopathies. Lumbar Discectomy is the most frequently performed neurosurgical procedure in the United States [4]. The goals of surgery are to decompress the nerve root and to retrieve free or herniated disc fragments while avoiding instability. Surgical results were optimized by proper patient selection, adherence to proper anatomic landmarks, and adequate illumination and magnification. However, the decision to have surgery requires assessing whether a clinically meaningful reduction in pain and/or disability is more likely to occur spontaneously or with surgery. Since this technique is becoming popular in India as well, we decided to study the clinico-epidemiological profile of the patients who presented to our hospital with low back pain, were diagnosed with lumbar disc herniation and were operated with micro-lumbar discectomy.

Methodology

Study Design and setting

The study was designed and performed in the Department of Orthopedics, Lokmanya Hospital Chinchwad and Lokmanya Hospital Nigdi, Pune from August 2002 till May 2004. After approval of the institutional ethics committee, we included patients who were admitted for and operated for lumbar disc herniation with microlumbar disc surgery. During the study period 24 cases were operated and were thus included in the study. Patients presented to our department in the outpatient clinic. All patients first underwent conservative therapy that included rest, pharmacotherapy, and physical therapy in the form of interferential therapy or short wave diathermy, for the minimum period of three weeks.

Sample population

All the patients were from the near by area around the hospital. Criteria for inclusion were unremitting sciatica, with or without back pain, and/or a neurological deficit that correlated with appropriate level and side of neural compression revealed on CT or MR imaging. Patients who presented with other spinal degenerative conditions such as stenosis or arthritis with herniated disc were not excluded because their symptoms were suggestive of the herniated disc, while the patients with associated bony canal stenosis and spondylolisthesis were excluded. Age, sex, and other medical condition were not the criteria for exclusion of the patients in this study. Preoperatively, routine investigations like haemogram, blood sugar, blood urea and serum creatinine, ECG, chest X-ray and urine examination was done, marker X-ray of the lumbo-sacral spine was taken. Patients were advised to stop smoking at last 10 days prior to surgery and stop non-steroidal anti-inflammatory drugs one week prior to surgery. As with all surgical procedures, informed consent was obtained and an explanation of risks, alternatives, and benefits was given. The patients were educated about the likehood of the procedure being performed on an outpatient basis only.

Data Collection and Data Analysis

We collected personal, demographical and clinical history of the patients. All patients underwent X-ray lumbo-sacral spine anterior – posterior and lateral view on their first visit to the hospital. When improvement in sings and symptoms were not satisfactory with conservative method in three weeks of time the Computed Tomography (CT)-myelography or Magnetic Resonance Imaging (MRI) of lumbo-sacral spine was done. MRI was preferred investigatin of choice. The data was compiled and analysed descriptively using Epi Info software. The frequency tables were prepared and percentages were calculated.

Results

In our study, we included 24 patients. 15 patients were males and most common age group was 40 to 60 years (54%). Average age was 45.85 years, ranging between 24 to 64 years. Most of the patients were moderate workers and domestic workers. There were no heavy workers in our patient population (Table 1). 68% of the patients had a medium built, rest of the patients had a strong built (21%) and asthenic (21%). L4-L5 was the most commonly involved level of disc involved in our patient population. Radiation of pain towards the right was more commonly seen then left (Table 2). Majority of the patients had duration of symptoms between 2 to 6 months (42%). 7 patients had sensory distribution of neurological symptoms, 4 had motor and reflex distribution of symptoms each. 54% of the patients underwent CT myelography for diagnosis and rest received MRI before a diagnosis could be made.

Table 1: Socio-demographic characteristics of patients

Variable	*n*
Number of patients in the study	24
Age distribution	
Less than 40 years	8 (33%)
40-60 years	13 (54%)
More than 60 years	3 (13%)
Gender distribution	
Males	15 (62%)
Females	9 (37%)
Occupation	
Housewife	8 (33%)
Light worker	7 (29%)
Moderate worker	9 (38%)
Heavy worker	0 (0%)
Built of the patient	
Strong	5 (21%)
Medium	14 (68%)
Asthenic	5 (21%)

Table 2: Clinical information of patients enrolled in the study

Level of disc prolapse	*n*
L3-L4	1 (4%)
L4-L5	15 (63%)
L5-S1	8 (33%)
Site of radiating pain	
Right	13 (54%)
Left	11 (46%)
Duration of symptoms	
Less than 1 month	7 (29%)
Between 2-6 months	10 (42%)
More than 6 months	7 (29%)
Distribution of neurological symptoms	
Sensory	7 (29%)
Motor	4 (17%)
Reflex	4 (17%)
Neuroimaging	
Computed Tomography Myelography	13 (54%)
Magnetic Resonance Imaging	11 (46%)

Discussion

It is difficult to estimate the prevalance of back pain, but some surveys have been used to make an estimate. A systematic review publishedin 2012 estimated that the global point prevalence of activity-limiting low back pain lasting for more than one day was 12% and the one-month prevalence was 23%. [5] A number of risk factors have been associated with back pain complaints include smoking, obesity, age, female gender, physically strenuous work, sedentary work, psychologically strenuous work, low educational attainment, job dissatisfaction, and psychologic factors like anxiety and depression [6].

Almost 90% of all symptomatic disk herniations occur in the lumbar spine. Most lumbar herniations involve L4-L5 and or L5-S1 levels and thus produce calf pain with compression of the L5 or S1 nerve roots. Other presentations depend on the location of disk herniation, with anterior thigh pain and positive findings of a femoral nerve stretch test being the most common presentation in patients with impingement of L2, L3, or L4 nerve roots. With improvements in advanced imaging techniques, lumbar disc herniations have been increasingly

recognized in symptomatic and even in asymptomatic individuals [7]. Additionally, imaging exams often show abnormal findings in adults without low back pain, which can make it difficult to correlate symptoms with imaging findings. Disc herniations on MRI are seen in 22 to 67% of asymptomatic adults and spinal stenosis in 21% of asymptomatic adults over age 60 [8]. For imaging of the lumbar spine, MRI, CT, and CT myelography are equally sensitive for the diagnosis of disc herniation [9]. For routine initial assessment, an MRI is more informative than CT because it can also identify other intraspinal pathologies, including inflammatory, malignant, and vascular disorders. In addition, MRI is not associated with ionizing radiation and is less invasive than CT myelography.

In our study, we found majority of the patients to be males, however equal prevelance in both the genders have been noted [10]. The type of occupation has been shown to be associated with disc herniation [11]. In our sample majority of the patients were house workers or light workers. 38% of the patients were moderate workers and none were heavy workers.

Conclusion

Lower back pain is very common and lumbar disc herniation is the usual cause for this pain. Majority of the patients will present with moderate to severe pain. Understanding their demographic and clinical profiles can help us in diagnosing these patients early, which is associated with better clinical outcomes.

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