Original Article

Lumbar Disc Lesion

Epidemiological Features of Lumbar Disc Lesion in Patients Reporting Neurosurgery at DHQ Mirpur

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ABSTRACT

Objective: This study examined the social and demographic characteristics of lumbar disc prolapse in patients reporting to outpatients department of Neurosurgery at DHQ Hospital Mirpur AJK

Study Design: Observation / descriptive study

Place and Duration of Study: This study was conducted at the Department of Neurosurgery, DHQ hospital Mirpur from June 2015 to January 2017

Materials and Methods: A total of 108 patients with proven lumbar disc prolapse on MRI who attended the neurosurgical outpatient from June 2015 to January 2017 were included in the study.

Results: The most common age group involved was between 31-40 years and 41-50 years (31.5 % each). The most commonly affected level was L4/5 (44.4 %). Majority of patients affected (66.7%) were from rural areas. 44.4 % were moderate and 29.6% were heavy workers. The patients who drove vehicle on bad roads were more affected.

Conclusion: Lumbar disc prolapse is common in people working or living in poor infrastructure

Key Words: Disc prolapse, Working conditions, Rural or Urban, Level of disc prolapse

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INTRODUCTION

Upright posture puts enormous stress on the spine. Compressive loads on lumbar intervertebral discs are 1 to 2.5 times the body weight during normal walking. During lifting of 14 to 27 kg objects axial compressive loads in lumbar spine increase up to ten times body weight with anteroposterior shear loads approaching double body weight[1]. Eccentrically placed loads result in bulging of the annulus to the opposite side (2). Excessive mechanical loading in a vulnerable disc precipitates degeneration. Direct mechanical damage whether through cyclic fatigue loading, hypermobility or increase shear stress can be associated with degenerative progress[2].

Lumbar disc prolapse is protrusion of nucleus pulposus through annulus fibrosus which compress the exiting nerve roots or cauda equine compelling the patient to go on bed and seeking the treatment.

The problem of lumbar disc prolapse is of utmost importance in our community because of the fact that spine of people is subjected to severe stress due to peculiar working conditions and poor infrastructure. .

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MATERIALS AND METHODS

This study was planned to find out epidemiological aspects of lumbar disc herniation at our neurosurgical unit during June 2015 t0 January 2017. It was a hospital based prospective study in which 108 patients newly diagnosed with MRI who attended the neurosurgical clinic were included. The patient data were recorded according to preset protocol.

Patient profile like age sex BMI occupation area of residence (rural/urban) road conditions in their locality (good/bad) and vehicle used by them (four wheel/motorbike) were noted.

Clinical and radiological characteristics like duration of illness sphincterdisturbances, history of direct trauma and no of pregnancies in female patients were documented MRI findings of prolapsed disc such as level and type were also documented.

SPSS version 18 was used to analyze the data

RESULTS

Among 108 patients 56 (51.9%) were male and 52 (48.1%) were female. The most common age of presentation was 31-40 years and 41 to 50 years (31.5% each) followed by 21-30 years (21.4 % n:26). Highest percentage of patient was between 21-50 years (88.1 % n:94).The patients from rural areas were 66.7 % (72 patients) .The percentage of rural moderate workers was 45.8 % (Table 1). Among 40 female rural patients 27 (67%) were moderate workers.

Table No.1: Life style versus area of residence in Lumbar disc Prolapse Patients

			Occupation			
			Sedentary	Moderate Worker	Heavy Worker	Total
Residence	Rural	Count	10	32	29	71
		% within Residence	14.1%	45.1%	40.8%	100.0%
		% within Occupation	41.7%	64.0%	87.9%	66.4%
		% of Total	9.3%	29.9%	27.1%	66.4%
	Urban	Count	14	18	4	36
		% within Residence	38.9%	50.0%	11.1%	100.0%
		% within Occupation	58.3%	36.0%	12.1%	33.6%
		% of Total	13.1%	16.8%	3.7%	33.6%
Total		Count	24	50	33	107
		% within Residence	22.4%	46.7%	30.8%	100.0%
		% within Occupation	100.0%	100.0%	100.0%	100.0%
		% of Total	22.4%	46.7%	30.8%	100.0%

Table No.2: Vehicle driving versus road conditions

			Vehicle		
			Motor Bike	4 Wheeler	Total
Roadcond	Good	Count	0	10	10
		% within Roadcond	.0%	100.0%	100.0%
		% within Vehicle	.0%	50.0%	41.7%
	Bad	Count	4	10	14
		% within Roadcond	28.6%	71.4%	100.0%
		% within Vehicle	100.0%	50.0%	58.3%
Total		Count	4	20	24
		% within Roadcond	16.7%	83.3%	100.0%
		% within Vehicle	100.0%	100.0%	100.0%

Among 24 vehicle users most common were four wheeled drivers (83.3%) followed by motor bike drivers (16.7 percent). Fifty percent 4 wheel drivers and all the motor bike drivers were using bad road conditions. (Table 2)

History of direct trauma was noted in 9.3 percent of patients and among them 80 % were female and 20 % were male.

Majority of patients (35.2%) had duration of illness between 1-3 months followed by more than 12 months (31.5 %), 22.2 % patients had duration of illness 4-6 months.

Bladder and bowel involvement was found in only 1.9 % of patients and all of them were male.

L4/ 5 disc prolapse was the most common (44.4) percent of patients followed by L5 /S1 (37 %). Multiple level disc prolapse was found in 13 % of patients. L 3/4 level prolapse was in 3.7 % and higher level was in only 1.9 %.

L4 /5 level disc prolapse was most common in all age groups except in 21-30 years where L5 /S1 was found in 30 % of patients as compared to 20.8 % at that level. Multiple disc prolapse were found more common in age groups between 41-50 years.

Common disc prolapse in female was L4 /5 (65 %) as compared to male (35 %).

Vehicle drivers on bad road conditions had common disc prolapse at L4/5 level (50 %) followed by L5/S1 level (25 %). Sixty percent of drivers having good road conditions had L5 / S1 prolapse compared to 40 % at L4 /5 level.

Among the female patients who had multiple disc prolapse 66.7 % had multiple pregnancies.

The most common age of presentation for protruded disc was 31-40 years (33.3 %) and extruded was in 21-30 years (25%). Migrated disc was not found below 20 and above 60 years.

Table No.3: Age Group versus level of disc prolapse

			Leveldisc					
Age group in years			L3-4	L4-5	L5-S1	Multiple	55	Total
	0-20	Count	0	2	0	0	0	2
		% within AgeGroup	.0%	100.0%	.0%	.0%	.0%	100.0%
		% within Leveldisc	.0%	4.2%	.0%	.0%	.0%	1.9%
	21-30	Count	0	10	12	4	0	26
		% within AgeGroup	.0%	38.5%	46.2%	15.4%	.0%	100.0%
		% within Leveldisc	.0%	20.8%	30.0%	28.6%	.0%	24.1%
	31-40	Count	0	14	18	2	0	34
		% within AgeGroup	.0%	41.2%	52.9%	5.9%	.0%	100.0%
		% within Leveldisc	.0%	29.2%	45.0%	14.3%	.0%	31.5%
	41-50	Count	4	14	6	8	2	34
		% within AgeGroup	11.8%	41.2%	17.6%	23.5%	5.9%	100.0%
		% within Leveldisc	100.0%	29.2%	15.0%	57.1%	100.0%	31.5%
	51-60	Count	0	4	4	0	0	8
		% within AgeGroup	.0%	50.0%	50.0%	.0%	.0%	100.0%
		% within Leveldisc	.0%	8.3%	10.0%	.0%	.0%	7.4%
	>70	Count	0	4	0	0	0	4
		% within AgeGroup	.0%	100.0%	.0%	.0%	.0%	100.0%
		% within Leveldisc	.0%	8.3%	.0%	.0%	.0%	3.7%
Total		Count	4	48	40	14	2	108
		% within AgeGroup	3.7%	44.4%	37.0%	13.0%	1.9%	100.0%
		% within Leveldisc	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table No.4: Sex * Residence Cross tabulation

			Residence		
			Rural	Urban	Total
Sex	Male	Count	32	24	56
		% within Sex	57.1%	42.9%	100.0%
	Female	Count	40	12	52
		% within Sex	76.9%	23.1%	100.0%
Total		Count	72	36	108
		% within Sex	66.7%	33.3%	100.0%

DISCUSSION

The actual cause of Lumbar intervertebral disc prolapse is not known, but many factors (autoimmune, genetic, re-absorption and biomechanical) have been implicated in accelerating the process3.

The intervertebral disc gets dehydrated and decreased in size with aging process. It has been shown that failure of the human lumbar intervertebral disc occurs most often in the part of spine that is subjected to heaviest mechanical stress4.

A family history of lumbar disc herniation, lumbar load and hard work are the major risk factors for lumbar disc herniation5.

However, the most commonly identified risk factor associated with lumbar disc herniation includes young age, male gender, familial association, environmental factor, trauma and cigarette smoking6.

In this study male are more affected than females which is common in all studies5,7.

The most common age of presentation was 31-40 years and 41 to 50 years 31.5% each. which is comparable to studies carried out by Prasad and Webber's et al.[7,8]. This is the age group involved in more stressful activities resulting in continuous trivial trauma to spine.

Among moderate workers who had disc prolapse 64% had rural life. That may be due to poor infrastructure in rural areas which cause continuous stress to spine.

Females working in rural areas were found to have more incidence of lumbar disc prolapse.

Seidler and colleagues in their studies found a statistically significant positive association between extreme forward bending and disc herniation[9].

Fifty percent of four wheel drivers and all of motor bike drivers in our study were driving on bad roads which is statistically significant (P<0.001) to suggest that repeated jerks on bad roads are prone to develop lumbar disc prolapse comparable to study carried out by Prasad and colleagues[7].

In male professional drivers, the occurrence of sciatic pain has showed stronger associations with measures of internal lumbar loads[10].

Majority of the patients had duration of illness between 1-3 months. 63 .2 % of patients were from rural areas, which is comparable to other studies[7,9] but no statically difference between area of residence and duration of illness could be found.

The incidence of bowel and bladder dysfunction was found only in 1.9 % of patients which was comparable to studies carried out by Wein and others[11,12].

Heavy manual labor and diabetes mellitus in males and housekeeping females are found to be more prone for lumbar disc prolapse[13,14].

Considering the level of disc prolapse multiparous women and increase in age was found to have multiple disc prolapse. Among the females who have multiple disc prolapse 66.7 % had 3-4 pregnancies and 33.3% had more than 5 pregnancies. This is in line with other studies reported in literature[15,16,17].

The L4/5 level disc lesion was found to be more common in all age groups except 21-30 years where common lesion was L5/S1. This is in comparison with most of studies[18,19,20]. In our study patients who had multiple disc prolapse 57.1 % were between 41-50 years and 42.9 % were heavy workers comparable to other studies[21].

CONCLUSION

In this study rural areas moderate and heavy workers, females with multiple pregnancies and the drivers running vehicle on bad road conditions were found to have increased tendency of lumbar disc prolapse.

Improving the infrastructure in rural areas may help to reduce the incidence of lumbar disc prolapse. This is a small study further studies with large sample size are needed for more evaluation of the problem

Conflict of Interest: The study has no conflict of interest to declare by any author.

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