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Lumbar disc prolapsed among families in Iraq

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Abstract

Intervertebral disc pathology (IVD)including herniation is a common disorder that can be caused by multifactorial genetic, mechanical, behavioral, and environmental, but recent studies have revealed that genetic factors are play the main important role in the predisposition of disc diseases.The objective of work is to study if the family history confirm another risk factor for nerve root pain or lumber disc herniation.A cross-sectional study was carried out at Abu-Graib General Hospital, Baghdad, Iraq during the period between August 2019 till March 2021. The age of those group was between (18-66) years old. By physical examination only patients diagnosed having lumbar disc prolapsed included. We measure BMI of those patients and follow up their family during this period. A total of 276 individuals (110 males, and 166 females) diagnosed with intervertebral disc herniation (IDH). All patients were investigated for demographical data including age, sex, site, level of herniation, and family history. We measured weight, height, and BMI for each patients. Two-hundred-seventy-six patients with IDH were enrolled with mean age 40.99±13.65 year. The frequent age groups affected lined between 20 to 60 years. Females were more than males documented with M:F ratio 1:1.5. Most of patients were overweight in 122(44.2%), besides, 95(34.4%) obese participants. One-hundred-twenty-two (44.4%) for both right and left site of lesion. The most common level involved in IDH was lumber 4-5 vertebrae in 197(71.4%). Family history was observed in (152, 55.1%). Mother relative was the most common documented in 57(20.7%). In regression analysis, BMI, site of lesion, level of vertebrae, and family history were significantly differences altering development of IDH (P= 0.01, 0.014, 0.01, 0.004), respectively.Herniated lumbar disc is a disease of middle age, obese, and female gender. There are no site or side specific

for herniation. The lumber vertebrae are the most level liable for disc prolapse. The strongest risk factors of development IDH are family history, and BMI, besides, lumber region herniation.

Keywords: *Herniation, Disc prolapse, lower back pain, lumber vertebrae, LDH*

Introduction

Lower back pain (LBP) remains the most important musculoskeletal condition affecting the quality of life over the past few decades [1].The most common causes of LBP are intervertebral disc (IVD) diseases and their related pathologies. IVD can affect both the young and old population [2,3].Intervertebral disc herniation (LDH) is a localized displacement of IVD tissue beyond the physiological margins of the space that can end with low back pain, radicular pain, motor weakness, numbness,and/ or tingling in amyotomal, and dermatomal distribution [4].IDH are most commonly postero-lateral herniation that affect the root of traversing nerve,and pain may either be from mechanical compression or chemical irritation. Deformity of mechanical compression can stretch the nerve,as well as compress the microcirculation end with ischemia and radicular symptoms; besides, the herniation stimulate a substantial inflammatory cascade that is critical in the disc herniation resorption ,butitcanalsocausechemicalirritationoftheroot [5, 6].

Several associated factors have been implicate in the development of LBP asan elevated body mass index (BMI),which is thoughttobe due to the increased axial load on the spine [7].Occupational risk factors for IDH have been extensively studied, as this pathology is more common in working aged individuals [8].Also smoking act as an independent risk factor for IDH [9].

This work is conducted to study if the family history confirm another risk factor for nerve root pain.

Methods

Study design and setting

A cross-sectional study was carried out at Abu-Graib General Hospital, Baghdad, Iraq during the period between August 2019 till March 2021.The study included more than 1000 patients of both sex complained from low back pain who attended daily clinic. The age of those group was between (18-66) years old.By physical examination only 276 patients diagnosed as having lumbar disc prolapsed and the diagnoses was confirmed by MRI. We measure BMI of those patients and follow uptheir family during this period to assess if there are another members in their family have the same complain.

Data collection

A total of 276 individuals (110 males, and 166 females) diagnosed with IDH by MRI were selected as cases. All patients were investigated for demographical data includingage, sex, site, level of herniation, and family history. We measured weight, height, and BMI for each patients.

Ethics approval

All authors declare they have no competing interests. The study was approved by the Abu-Graib General Hospital.

Statistical analysis

Data were prepared, arranged and entered into a computer file. Statistical Package for the Social Science (IBM, NY, USA, SPSS, version 20) was used for analysis.Mean and SD were used to described categorical variables. Frequency and percentage used to determined nominal data. Simple linear logistic regression analysis used for a set of paired data. Multiple logistic regression calculator used to comprising independent values. A P-value < 0.05 consider as statistically differences.

Results

Two-hundred-seventy-six patients with LDH were enrolled with mean age 40.99±13.65 year. The frequent age groups affected lined between 20 to 60 years in 49.2%, and 44.2%, respectively. Females were more than males documented (165 vs. 110) with M:F ratio 1:1.5. Most of patients suffered from weight less than 80 Kg in 149(54.5%). Also, most of height measured below 168 cm in 152(55%). Most of patients were overweight in 122(44.2%), besides, 95(34.4%) obese participants. One-hundred-twenty-two (44.4%) for both right and left site of lesion. In addition, bilateral injuries were figured in 11.2%. The most common level involved in LDH was lumber 4-5 vertebrae in 197(71.4%), followed by lumbo-sacral vertebrae and intervertebral joints. Family history was observed in (152, 55.1%). The rest (44.9%) were of non-family history. Mother relative was the most common documented in 57(20.7%).

In relation to liner regression analysis, BMI, site of lesion, level of vertebrae, and family history were significantly differences altering development of IDH (P= 0.01, 0.014, 0.01, 0.004), respectively. Regarding multiple regression method, only level of lesion and family history were affected the LDH manifestation (P= 0.001, 0.0001), respectively. (Table 1)

Table 1. Summary of all studys' findings.

Variables		No.	%	Liner regression analysis	Multiple analysis	OR
				P-value		
Age 40.99±13.65	<20	1	0.4	0.132	0.06	0.02
	20-40	135	49.2			
	40-60	122	44.2			
	>60	17	6.2			
Sex	Male	110	40	0.099	0.1	0.5
	Female	165	60			
Weight	≤80	149	54.5	0.06	0.07	0.5

81.7±16	>80	126	45.5			
Height 168.35±10.1	≤168	152	55	0.25	0.33	0.38
	>168	123	45			
BMI 28.76±5.03	Under	6	2.2	0.01	0.011	3.1
	Normal	53	19.2			
	Overweight	122	44.2			
	Obese	95	34.4			
Site	Right	122	44.4	0.014	0.022	4.2
	Left	122	44.4			
	Bilateral	31	11.2			
Level	L 2-3	2	0.7	0.01	0.001	5.6
	L 3-4	18	6.5			
	L 3-5	1	0.4			
	L 4-5	197	71.4			
	L-S	58	21.0			
Family members effected	Father	27	9.7	0.004	0.0001	7.1
	Mother	57	20.7			
	Brother	35	12.7			
	Sister	32	11.6			
	Other	1	0.4			
	Nile	124	44.9			

Discussion

Herniated lumbar disc is a displacement of disc material beyond the intervertebral disc space. Middle age groups are the most common affect with IDH in within age third to fifth decades of life [10-13], which is differ from our findings, in this study the range is more expand lined from 20-60 years. High percentage reported at age between (40-49) and constitute (31.1 %) in cases [13]. The highest prevalence is among people aged 30–50 years, with a male to female ratio of 2:1 [10].The natural history of IDH is difficult to known, because most people take some form of medicine for back pain, and a final diagnosis is not made yet. Clinical improvement is usual in most patients, and only about 10% of still have moderate or sufficient pain after six weeks. Sequential MRI shown that the herniated part of the disc tend to regress over time, with partial to complete resolution after six months [14, 15].

In this study, M:F ratio is 1:1.5. Most of patients were overweight in 122(44.2%), besides, 95(34.4%) obese participants. One-hundred-twenty-two (44.4%) for both right and left site of lesion. The most common level involved in LDH was lumber 4-5 vertebrae in 197(71.4%), followed by lumbo-sacral vertebrae and intervertebral joints. Agreement and disagreement are seen in several previous studies.LDH is more common in male than female with a ratio of 1.74:1 [11]. The LDH is common in males and constituted of (63.5%) and most of the cases were overweight (69.5%) in a study conducted in Mosul city [13].

Alshehri et al., disagree with our data regarding gender percet, they found people aged 25–55 years, about 95% of IDH occur at the lower lumbar spine (L4/5 and L5/S1 level) and above this level is more common in people aged over 55 years [11].

Most of patients were overweight in 122(44.2%), besides, 95(34.4%) obese participants. BMI has direct influence on LDH, especially individuals who are with overweight [10, 13].

One-hundred-twenty-two (44.4%) for both right and left site of lesion. In addition, bilateral injuries were figured in 11.2%. The most common level involved in LDH was lumber 4-5 vertebrae in 197(71.4%), followed by lumbosacral vertebrae and intervertebral joints.

Family history was observed in (152, 55.1%), and mother relative was the most common documented. This may be because women spend over time on the stage to further work in the kitchen and higher percent than our data was reported by Alshehri et al. [10]. In 2009, Battie et al, found extensive association between family history and herniated discs [16]. The previous literature had shown a hereditary tendency for disc degeneration, and it is associated with an increased risk for IDH [17-20].

In regression analysis, the BMI, site of lesion, level of vertebrae, and family history were significantly differences altering development of IDH (P= 0.01, 0.014, 0.01, 0.004), respectively. Regarding multiple regression method, only level of lesion and family history were affected the LDH manifestation.

Generally, population may be an aware of the clinical features of IDH, risk factors, and preventive measures and this may lead to misdiagnosis of many cases and the initial clinical presentation may be undetected with many other medical conditions [13].

Several studies recorded very poor awareness regarding disc prolapse, risk factors, treatment, and preventive measures. As the majority of the sample were highly educated, this poor awareness may be due to lack of health education sessions, community indifference regarding this problem which may end in permanent disability [10, 11].

Depending on the findings, we recommends proceeding future researches to find a relationship between factors as socio-demographic, lifestyle, diet, incidence of caudaequina syndrome, and the effectiveness of combination therapies with LDH.

Conclusions

Herniated lumbar disc is a disease of middle age, obese, and female gender. There are no site or side specific for herniation. The lumber vertebrae are the most level liable for disc prolapse. The strongest risk factors of development LDH are family history, and BMI, besides, lumber region herniation.

Conflict of interest

None

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References

1. Vos T, Flaxman AD, Naghavi M, Lozano R, Michaud C, Ezzati M, et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012 Dec 15;380(9859):2163-96. doi: 10.1016/S0140-6736(12)61729-2. Erratum in: Lancet. 2013 Feb 23;381(9867):628. AlMazroa, Mohammad A [added]; Memish, Ziad A [added]. PMID: 23245607; PMCID: PMC6350784.
2. Sharma A, Sargar K, Salter A. Temporal Evolution of Disc in Young Patients with Low Back Pain and Stress Reaction in Lumbar Vertebrae. AJNR Am J Neuroradiol. 2017 Aug;38(8):1647-1652. doi: 10.3174/ajnr.A5237. Epub 2017 Jun 1. PMID: 28572152; PMCID: PMC7960412.
3. Gerhardt J, Bette S, Janssen I, Gempt J, Meyer B, Ryang YM. Is Eighty the New Sixty? Outcomes and Complications after Lumbar Decompression Surgery in Elderly Patients over 80 Years of Age. World Neurosurg. 2018 Apr;112:e555-e560. doi: 10.1016/j.wneu.2018.01.082. Epub 2018 Jan 31. PMID: 29391295.
4. Appel B. Nomenclature and classification of lumbar disc pathology. Neuroradiology. 2001 Dec;43(12):1124-5. PMID: 11792058.
5. Doita M, Kanatani T, Harada T, Mizuno K. Immunohistologic study of the ruptured intervertebral disc of the lumbar spine. Spine (Phila Pa 1976). 1996 Jan 15;21(2):235-41. doi: 10.1097/00007632-199601150-00015. PMID: 8720410.
6. Zhou G, Dai L, Jiang X, Ma Z, Ping J, Li J, Li X. Effects of human midkine on spontaneous resorption of herniated intervertebral discs. IntOrthop. 2010 Feb;34(1):103-8. doi: 10.1007/s00264-009-0740-2. Epub 2009 Mar 11. PMID: 19277655; PMCID: PMC2899275.
7. Weiler C, Lopez-Ramos M, Mayer HM, Korge A, Siepe CJ, Wuertz K, Weiler V, Boos N, Nerlich AG. Histological analysis of surgical lumbar intervertebral disc tissue provides evidence for an association between disc degeneration and increased body mass index. BMC Res Notes. 2011 Nov 16;4:497. doi: 10.1186/1756-0500-4-497. PMID: 22087871; PMCID: PMC3226673.
8. Cummins J, Lurie JD, Tosteson TD, Hanscom B, Abdu WA, Birkmeyer NJ, Herkowitz H, Weinstein J. Descriptive epidemiology and prior healthcare utilization of patients in the Spine Patient Outcomes Research Trial's (SPORT) three observational cohorts: disc herniation, spinal stenosis, and degenerative spondylolisthesis. Spine (Phila Pa 1976). 2006 Apr

1;31(7):806-14. doi: 10.1097/01.brs.0000207473.09030.0d. PMID: 16582855; PMCID: PMC2775468.

9. Jordan J, Konstantinou K, O'Dowd J. Herniated lumbar disc. BMJ ClinEvid. 2009 Mar 26;2009:1118. PMID: 19445754; PMCID: PMC2907819.
10. Alshehri AK, Alshehri TK, Alyali SA, Alshahrani AA, Alshehri SH. Awareness of disc herniation among general population in Aseer province, Saudi Arabia. J Family Med Prim Care. 2019 Mar;8(3):1159-1163. doi: 10.4103/jfmpc.jfmpc_462_18. PMID: 31041267; PMCID: PMC6482715.
11. Sahrah H, Mansour M, Elhussein N, Ahmed R, Alzahrani A. Disc prolapse awareness among population in taif- Saudi Arabia. Int J Adv Res 2016;4:188- 97.
12. Hammer C, Heller J, Kepler C. Epidemiology and pathophysiology of cervical disc herniation. Semin Spine Surg 2016;28:64- 7.
13. Alhaso IH, Ibrahim RH. The Risk Factors for Lumbar Disc Herniation in Mosul City. Mosul Journal of Nursing, 2016; 4(2):93-99. doi: 10.33899/mjn.2016.160043
14. Hasan MK. Prevalence and risk factors of low back pain among nurses in operating rooms, Taif, Saudi Arabia. Am J Res Commun 2013;1:50.
15. Kuniya H, Aota Y, Kawai T, Kaneko K, Konno T, Saito T. Prospective study of superior cluneal nerve disorder as a potential cause of low back pain and leg symptoms. J OrthopSurg Res 2014;31:139.
16. Battié MC, Videman T, Parent E. Lumbar disc degeneration: epidemiology and genetic influences. Spine (Phila Pa 1976). 2004 Dec 1;29(23):2679-90. doi: 10.1097/01.brs.0000146457.83240.eb. PMID: 15564917.
17. Ma D, Liang Y, Wang D, Liu Z, Zhang W, Ma T, Zhang L, Lu X, Cai Z. Trend of the incidence of lumbar disc herniation: decreasing with aging in the elderly. ClinInterv Aging. 2013;8:1047-50. doi: 10.2147/CIA.S49698. Epub 2013 Aug 7. PMID: 23966775; PMCID: PMC3743527.
18. Doughem K, Weisman MH, Ward MM, Gensler LS, Ishimori M, Tahanan A, Kung DC, Diekman L, Lee M, Rahbar MH, Reveille JD. Chronic back pain in first-degree relatives (FDRs) of patients with ankylosing spondylitis: predictive value of HLA-B27 and persistence of inflammatory back pain over time. RMD Open. 2020 Nov;6(3):e001418. doi: 10.1136/rmdopen-2020-001418. PMID: 33243782; PMCID: PMC7856153.
19. Zielinska N, Podgórski M, Haładaj R, Polguj M, Olewnik Ł. Risk Factors of Intervertebral Disc Pathology-A Point of View Formerly and Today-A Review. J Clin Med. 2021 Jan 21;10(3):409. doi: 10.3390/jcm10030409. PMID: 33494410; PMCID: PMC7865549.

20. AlashawJ. The impact of height, weight and body mass Index on the occurrence of herniated intervertebral lumbar disc. Tikrit Medical Journal. 2011;17(1):133-137