Cervical disc herniation epidemiology

- Surgical versus Nonsurgical Treatment for Cervical Radiculopathy
- Surgically treated degenerative cervical spine diseases in twins
- Preoperative determinants of postoperative expectation fulfillment following elective lumbar spine surgery: an observational study from the Canadian Spine Outcome Research Network (CSORN)
- Hidden blood loss and risk factors in percutaneous endoscopic cervical discectomy
- Impact of incidental dural tears on postoperative outcomes in patients undergoing cervical spine surgery: a multicenter retrospective cohort study
- Prevalence of neurological diseases associated with cervical pain and/or signs of cervical myelopathy in French bulldogs: a retrospective analysis of 105 cases
- Factors associated with frozen shoulder in adults: a retrospective study
- Spinal column radiological factors associated with increased spinal cord intramedullary signal intensity - A study evaluating aging spinal cord's relation to spinal disc degeneration

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In a Hispanic Puerto Rico population, the most prevalent operated degenerative cervical disc levels were C5-C6 and C4-C5 [1)]

Descriptions of the epidemiology of cervical disc herniation (CDH) can be gathered from a few large series, such as the highly cited study from the group in Rochester which included 561 patients with cervical radiculopathy and did not attempt to distinguish those with CDH [2)].

With regard to age, the Rochester study reported that the mean age of men with cervical radiculopathy was 47.6 and for women was 48.2 [3)].

Of the 332 males and 229 females, ages 13-91, studied in that report, 21.9% had a confirmed disc protrusion. Other studies suggest that the types of cervical disc herniation presentations tend to be age specific and related to various habits or occupations such as those requiring heavy lifting or activities involving repeated axial loading [4)].

A significant number of asymptomatic disc herniation (DH) cases may be present as well [5) 6)]

However, these results have been limited to a certain age group, region, occupation, or group and cannot be referred to when evaluating the occurrence distribution in all age groups or the differences in DH incidence between men and women according to age [7) 8) 9) 10) 11) 12) 13) 14)] thereby limiting their generalizability. The limitations of these epidemiological studies are attributed to the lack of analysis of nationwide diagnosis documents which until now had been impossible. However, since big data analysis has become a major aspect of medical studies, several attempts have been made to analyze all health insurance data and identify the distribution of disease occurrence [15)].

In South Korea, health insurance data have become public, enabling the study of the distribution of disease occurrence through analysis of the data from the whole country.

Generally, identifying the distribution of disease occurrence is crucial for preventing a disease and determining the association between occupational factors and disease occurrence in order to

determine worker's compensation. Therefore, in this study, we analyzed health insurance data to identify the distribution of symptomatic CDH and LDH occurrence according to age, sex, and workforce eligibility for national health insurance. Asymptomatic DH was excluded from the analysis as its presence could not be determined from health insurance data. The qualification for health insurance varies with the characteristics of the tasks performed in the workplace. The reason for investigating the distribution of incidence by eligibility was to determine whether there were differences in the incidence of DH according to type of labor, as the nature and type of labor performed by the subscribers may vary according to their eligibility [16].

Cervical disc herniation (CDH) is the most common cause of cervical radiculopathy and could overlap with fibromyalgia (FM).The prevalences of FM and widespread pain in patients with CDH were found as 11.5% and 78.8% respectively [17].

References

1)
De Jesus O. Degenerative Cervical Disc Herniation: Prevalence of Affected Cervical Level in a Hispanic Population in Puerto Rico. World Neurosurg. 2024 Jan;181:e776-e779. doi: 10.1016/j.wneu.2023.10.125. Epub 2023 Oct 30. PMID: 37914080.

2), 3)
Radhakrishnan, K., et al., Epidemiology of cervical radiculopathy. A population-based study from Rochester, Minnesota, 1976 through 1990. Brain, 1994. 117 (Pt 2): p. 325-35.

4)
Hammer, C., Heller, J., & Kepler, C. (2016). Epidemiology and pathophysiology of cervical disc herniation. Seminars in Spine Surgery, 28(2), 64–67. doi:10.1053/j.semss.2015.11.009

5)
Lee B.W., Lee J.E., Lee S.H., Kwon H.K. Kinematic analysis of the lumbar spine by digital videofluoroscopy in 18 asymptomatic subjects and 9 patients with herniated nucleus pulposus. J. Manip. Physiol. Ther. 2011;34:221–230. doi: 10.1016/j.jmpt.2010.12.011.

6)
Boden S.D., McCowin P.R., Davis D.O., Dina T.S., Mark A.S., Wiesel S. Abnormal magnetic-resonance scans of the cervical spine in asymptomatic subjects. A prospective investigation. J. Bone Jt. Surg. Am. 1990;72:1178–1184. doi: 10.2106/00004623-199072080-00008.

7)
Al-Ryalat N.T., Saleh S.A., Mahafza W.S., Samara O.A., Ryalat A.T., Al-Hadidy A.M. Myelopathy associated with age-related cervical disc herniation: A retrospective review of magnetic resonance images. Ann. Saudi Med. 2017;37:130–137. doi: 10.5144/0256-4947.2017.130.

8)
Liu C., Huang C.C., Hsu C.C., Lin H.J., Guo H.R., Su S.B., Wang J.J., Weng S.F. Higher risk for cervical herniated intervertebral disc in physicians: A retrospective nationwide population-based cohort study with claims analysis. Medicine (Baltimore) 2016;95:e5055. doi: 10.1097/MD.0000000000005055.

9)
Lan F.Y., Liou Y.W., Huang K.Y., Guo H.R., Wang J.D. An investigation of a cluster of cervical herniated discs among container truck drivers with occupational exposure to whole-body vibration. J. Occup. Health. 2016;58:118–127. doi: 10.1539/joh.15-0050-FS.

10)
Tzeng Y.S., Chen S.G., Chen T.M. Herniation of the cervical disc in plastic surgeons. Ann. Plast. Surg. 2012;69:672–674. doi: 10.1097/SAP.0b013e3182742743.

11)
Shi N.N., Shen G.Q., He S.Y., Guo R.B. Epidemiology investigation and biomechanics analyses for the correlation between sacroiliac joint disorder and lumbar intervertebral disc degeneration. Zhongguo Gu Shang. 2014;27:560–564. In Chinese
12)
Zhang Y.G., Sun Z., Zhang Z., Liu J., Guo X. Risk factors for lumbar intervertebral disc herniation in Chinese population: A case-control study. Spine. 2009;34:e918–e922. doi: 10.1097/BRS.0b013e3181a3c2de.
13)
Leino-Arjas P., Kalla-Kangas L., Kauppinen T., Notkola V., Keskmaki I., Mutanen P. Occupational exposures and inpatient hospital care for lumbar intervertebral disc disorders among Finns. Am. J. Ind. Med. 2004;46:513–520. doi: 10.1002/ajim.20084.
14)
Zitting P., Rantakallio P., Vanharanta H. Cumulative incidence of lumbar disc diseases leading to hospitalization up to the age of 28 years. Spine. 1998;23:2337–2343. doi: 10.1097/00007632-199811010-00017.
15)
Alonso S.G., de la Torre-Diez I., Rodrigues J.J.P.C., Hamrioui S., Lopez-Coronado M. A systematic review of techniques and sources of big data in the healthcare sector. J. Med. Syst. 2017;41:183. doi: 10.1007/s10916-017-0832-2.
16)
Kim YK, Kang D, Lee I, Kim SY. Differences in the Incidence of Symptomatic Cervical and Lumbar Disc Herniation According to Age, Sex and National Health Insurance Eligibility: A Pilot Study on the Disease's Association with Work. Int J Environ Res Public Health. 2018 Sep 25;15(10):2094. doi: 10.3390/ijerph15102094. PMID: 30257414; PMCID: PMC6210730.
17)
Demir SE, Aytekin E, Karacan I, Aydin T, Kavadar GD. The prevalence of fibromyalgia among patients with cervical radiculopathy due to cervical disc herniation: A pilot study. J Back Musculoskelet Rehabil. 2013 Nov 13. [Epub ahead of print] PubMed PMID: 24225311.