

THE EVALUATION AND INTERPRETATION OF THE MOST COMMON INTER-VERTEBRAL DISCS IN CERVICAL HERNIAS: A RETROSPECTIVE STUDY

Nur Gülce İşkan¹, Cansu Kurt¹, Aslıhan Akşar¹, Aslan Tekataş²

¹ Trakya University Faculty of Medicine, Edirne, TURKEY

² Department of Neurology, Trakya University Faculty of Medicine, Edirne, TURKEY

ABSTRACT

Aims: In this study it is aimed to determine the most common intervertebral discs in cervical hernias and to discuss the possible causes of prevalence.

Methods: The data of 110 patients who were diagnosed with cervical disc hernia in Trakya University Health Center for Medical Research Neurology Clinics EMG lab in between 2012 and 2015 was analyzed retrospectively by looking at the age, gender and herniated intervertebral disc. Chi-Square test was used to determine the frequency of the cervical disc hernia in intervertebral discs in both genders. Independent Samples T Test was used to determine the correlation between prevalence of herniated intervertebral discs, age and gender. Arithmetic mean \pm standard deviation, number and percentages, median (minimum-maximum) were used as descriptive analysis.

Results: Out of 110 patients, there were 60 males (52.3%) and 50 females (48.7%) with the mean age of 50.43 ± 12.67 , the youngest patient was 26 and the oldest was 82. The most involved disc was found to be C5-C6 (15 males with a percentage of 25% and 23 females with a percentage of 46%).

Conclusion: The most common intervertebral disc in cervical hernia was detected as C5-C6. It may be because of the maximal extension and flexion, functional overloading and micro traumas which affect C5-C6 segment.

Keywords: Hernia, intervertebral disc, electromyography

INTRODUCTION

Cervical disc hernia (CDH) is a disease which occurs as a result of the replacement of nucleus pulposus to the spinal canal and may apply pressure to the nerves afterwards. Therefore neck pain reflected to the arms, tingling, numbness and loss of strength can be seen in patients (1). CDH is more common in the fourth or fifth decades of life with a percentage of 45% (2).

Cervical disc hernia is seen in different levels of cervical spine. Some researchers found out that CDHs are common in between C5-C6 and C6-C7 levels and in old patients, C2-C3 interval is the most common level (3-4).

Even though there are some arguments about the most common intervertebral discs in the literature, the-

re are fewer studies about the causes of the prevalence. Hence we carried out a retrospective analysis of the patients diagnosed with CDH in Trakya University Hospital to determine the most seen intervertebral discs and to acquire more information about potential causes of the prevalence.

MATERIAL AND METHODS

In this study, electromyography (EMG) data of 110 patients who diagnosed with CDH in Trakya University Health Center for Medical Research Neurology Clinics EMG lab in between 2012 and 2015 were analyzed retrospectively. Since the degeneration in cervical intervertebral discs is not seen in patients younger than 20-year-old generally, the data of patients younger than 18-year-old was not included in the study (5).

The reports were obtained by using Medelec Synergy EMG machine and sectioned by age, gender, EMG data and results. All of the reports were available in the archive room of the neurology department.

In evaluating the data, it was examined whether the patient was electrophysiologically diagnosed with CDH or not. Afterwards, the intervertebral discs which are associated with CDH were recorded and in order to analyze the cause of the prevalence, patients' age and gender were recorded as well.

After recording, all of the data was analyzed by using SPSS. In order to understand the frequency of the CDH in intervertebral discs in both genders, Chi-Square test was used. Independent Samples T Test was used to see whether there is a correlation between prevalence of herniated intervertebral discs and age and also gender. As descriptive analysis; arithmetic mean \pm standard deviation, number and percentages, median (minimum-maximum) were used.

RESULTS

Out of the total 110 patients who were included in the study, 60 (52.3%) were males and 50 (48.7%) were females. The mean age was 50.43 ± 12.67 , the youngest patient being 26 years and the oldest 82 years of age. The relationship between incidence in gender subgroups and age was also investigated, but the results were statistically insignificant ($p=0.091$).

2 (3.3%) males had disc herniation in C4, 2 (3.3%) males and 2 (4%) females in C4-C6, 2 (3.3%) males in C4-C7, 1 (1.7%) male and 1 (2%) female in C4-T1; 15 (25%) males and 23 (46%) females in C5-C6, 14 (23.3%) males and 7 (14%) females in C5-C7; 10 (16.7%) males and 1 (2%) female in C5-T1, 1 (2%) female in C5-C6 and C7-T1, 6 (10%) males and 1 (2%) female in C7, 5 (8.3%) males and 3 (6%) females in C7-T1, 3 (5%) males and 11 (22%) females in C8-T1 (Figure 1).

Considering the data, the frequency of hernia in C5-C6 is significantly more common than other intervertebral discs in both of the genders ($p=0.007$).

CONCLUSION

Cervical disc hernia may restrain functions of the body and affect daily activities negatively. Moreover

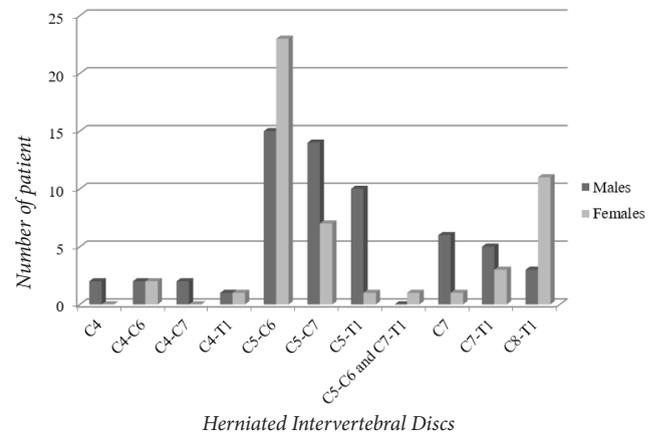


Figure 1: The distribution of CDH

cervical myelopathy may be seen in some cases. In order to diagnose the CDH, a detailed examination of the patient is necessary.

Magnetic resonance imaging is used commonly in this process (1). For differential diagnosis EMG may be used since it can restrict the place of the lesion to a particular root level (6). The disease has good prognosis. Resting, cervical collar, anti-inflammatory medicines and physiotherapy are recommended during the treatment process. If these conservative methods are not enough, then surgery may be done (1).

In our research, there were 110 patients who were diagnosed with CDH in Trakya University Health Center for Medical Research Neurology Clinics EMG lab in between 2012 and 2015 were analyzed. The hernia is most common in C5-C6 in both genders. In males, widespread involvement was seen in C5-T1 and in females, rare hernia was determined in C4.

Although our research is a local retrospective study, the results are compatible with the literature: CDH is commonly seen in C5-C6 (3-4). Lundsford et al. (7) found that 48% of CDH in C5-C6 followed by C6-C7 (37%) in a study of 334 patients. Even though the percentages are different in our study, the prevalence is compatible.

Even though our study is compatible with the literature, there are other studies which do not support our results. Odom et al. (2) found that in a series of 246 cases, C6-7 lesion is the most affected with a percentage of 70% followed by C5-C6 (24%) in a study in 1958. The result of our study is not compatible with this study.

There can be several causes for the prevalence in C5-C6. The biomechanical researches show that maximal extension and flexion can be performed by C5-C6 segment in an adult spine (8). Therefore, the risk of forming CDH in this segment increases. Another reason for this prevalence was suggested by Jomin et al. (9) after analyzing of series of a 230 cases. C5-C6 segment is exposed to functional overloading and micro traumas of a daily life. Thus C5-C6 segment is more appropriate for forming CDH.

As a result, it is found that CDH is a disease which is more common in C5-C6 segment because of several causes such as maximal extension and flexion, functional overloading and micro traumas. However, more studies regarding the causes of the prevalence of CDH should be conducted in order to understand the reasons entirely.

Acknowledgement

We thank Prof. Necdet Süt, head of Trakya University Department of Biostatistics, for his contributions in the process of statistical analysis of this article.

Ethics Committee Approval: This study was approved by Trakya University Faculty of Medicine Scientific Researches Ethics Committee.

Informed Consent: N/A

Conflict of Interest: The authors declared no conflict of interest.

Financial Disclosure: The authors declared that this study received no financial support.

REFERENCES

1. Kızıl R. Servikal Disk Hernileri. Türkiye Klinikleri J PM&R-Special Topics 2009;2(3):35-43.
2. Valencia M R, Perez A M. Cervical Disc Hernia. Revista Espanola de Crugia Ortopedica y Traumatologia 2010;54(5):314-20.
3. N'Dri Oka D, Kouakou F, Haro Y et al. Cervical spine disc herniation at C2-C3 level: Study of a Clinical Observation and Literature Review. Romanian Neurosurgery 2015;4:459-64.

4. Tsao S, Pidcoe P. The Management of a Patient with a Cervical Disc Herniation: A Case Report. Clinical Medicine. Case Reports 2008;1:45-9.
5. Şimşek S, Çaylı SR. Servikal Disk Hernileri. Türkiye Klinikleri J Neurosurg-Special Topics 2011;4(2):103-7.
6. Hakimi K, Spanier D. Electrodiagnosis of Cervical Radiculopathy. https://depts.washington.edu/neurolog/images/emg-resources/Cervical_Radiculopathy.pdf
7. Lunsford LD, Bissonette DJ, Jannetta PJ et al. Anterior surgery for cervical disc disease Part 1: Treatment of lateral cervical disc herniation in 253 cases. Journal of Neurosurgery 1980;53:1-11.
8. Baaj AA. et al. Handbook of Spine Surgery. Georg: Thieme Verlag; 2012.p.16-20.
9. Jomin M, Lesoin F, Loses G et al. Herniated Cervical Discs: Analysis of a Series of 230 Cases. Acta Neurochirurgica 1986;79:107-13.