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Determination of herniated segments by thermography in individuals with geriatric cervical disc herniation: Pilot study

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Introduction: Along with aging, the increase in individuals' existing health problems is inevitable. For this reason, radiologic examination is often not performed in elderly individuals. In addition to the importance of physical examination for the diagnosis of cervical disc herniation, radiological imaging techniques are often used to support the diagnosis. However, it has been shown that the thermography device is valid for determining the painful spinal segments in individuals who can not undergo radiological examinations due to current health problems. But, no studies have been done on older subjects. The aim of this study is to determine the validity and reliability of Nervo-Scope thermography device in identifying individuals with painful segments with geriatric cervical disc herniation.

Materials and Methods: Elderly individuals aged between 65 and 80 years who applied to the Ahi Evran University Physical Therapy and Rehabilitation Center were included in the study. Individuals who were diagnosed with cervical disc herniation, were able to stand independently for at least 5 minutes, did not have back and / or spine surgery, had no scoliosis, were volunteers, and did not have a neurocognitive disorder. The individual's C2-C7 vertebrae were palpated and marked. The device was activated by placing the C2 vertebral level of the device on both sides of the device. In the C2-C7 segments, the device was slowly scrolled and the temperature changes of the nervoscope were recorded. The results of individual MR (bulging: 1; protrude: 2; extruded: 3; sequestration: 4) were also noted. The results obtained from MRI and nervoscope instruments were then compared. In some individuals disk herniation was detected in more than one segment, so the number of herniation was considered, not the number of people. This study was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number FTR.A3.17.001. The differences between MR results and nervoscope results were compared with using "chi square" and "Pearson correlation analysis"

Results: Seventy-six volunteer CDH subjects with a mean age of 72.04 ± 8.21 years and a BMI of 25.14 ± 2.47 kg/m² were enrolled in the study. The MRI and nervoscope results were shown in Table 1. There was a statistically significant positive correlation between the herniation grades detected by MR and nervoscope in all segments (c2-3 $p < 0.001$, c3-4 $p < 0.001$; c4-5 $p < 0.001$; c5-6 $p: 0.014$; c6-7 $p: 0.021$) (Table 2).

Conclusion: Clinical diagnosis of cervical disc herniation is accompanied by physical examination and MR results. However, due to the presence of pathology and comorbidities present in elderly individuals, the MRI has often risks. This study was carried out to determine the herniated segments by thermography in cervical disc herniation in geriatric individuals. According to the results of the study, MRI (except C3-4) is more effective than nervoscope in determining all cervical spinal herniated segments. However, MRI and Nervoscope showed a statistically significant relationship. When MR is considered to be an expensive and side effect method, it is thought that nerves can be used to determine herniation level in geriatric cervical disc herniation.

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