Mamadaminova M.A.
Employees of the Department of Pediatric Traumatology,orthopedics and Neurosciences, Andijan State Medical institute
Kuldashev Q.A.
Doctor of Medical Sciences Andijan State Medical Institute, Head of the Department of Pediatric Traumatology, Orthopedics and Neurosurgery

EVIDENCE-BASED DIAGNOSIS OF ACUTE CERVICAL VERTEBRAE AND DOUBLE ACUTE SPINAL CORD INJURY

Abstract: This article discusses evidence-based approaches to the diagnosis of acute cervical spine injuries and double acute spinal cord injury. Acute cervical spine injuries are often associated with serious neurological issues and functional impairments, making prompt and effective diagnosis crucial. The article examines modern imaging techniques, clinical assessment, and evidence-based approaches for patient management.

Keywords: Acute cervical spine injury, Acute spinal cord injury, Diagnosis, Evidence-based medicine, Imaging diagnostics, Neurological assessment, Clinical management.

INTRODUCTION

Neck pain is one of the most common symptoms encountered in medical practice. According to numerous studies, the prevalence of this type of pain in the population ranges from 35 to 71%. By definition, neck pain is pain that occurs in the area delimited from above by the superior nuchal line, on both sides by the anterior edges of the trapezius muscles, and below by a transverse line drawn through the spinous process of the first thoracic vertebra [3].

MATERIALS AND METHODS

According to the studies, the structures whose damage potentially leads to the occurrence of neck pain are the facet joints, intervertebral discs, muscles, as well as the dura mater of the cervical spinal canal and the vertebral artery passing through the openings of the transverse processes of the vertebrae from the level of C6 to C1. The facet joints receive innervation from the posterior branches of the spinal nerves, with the exception of the atlanto-occipital joint and lateral atlantoaxial joints, which are innervated by the ventral branch of C1 and C2, respectively, as well as the medial atlantoaxial joint (Cruveilhier joint) and its ligaments supplied by the sinuvertebral nerves of Luschka C1–C3. The intervertebral discs have a complex innervation: the posterior part - from the posterior vertebral plexus formed by the cervical sinuvertebral nerves, the anterior part - from the anterior vertebral plexus formed from the branches of the cervical sympathetic trunk, the lateral parts - from the fibers of the vertebral nerve originating from the stellate ganglion and accompanying the vertebral artery. Unlike the lumbar and thoracic vertebrae, the bodies of the cervical vertebrae are not separated from each other along their entire length; on the lateral parts of the vertebral bodies there are hook-shaped processes that, when connected, form the uncovertebral joint (Lushka's joint), apparently of a compensatory nature in case of excessive load on the cervical region, which is absent in children. The joints are also innervated by the fibers of the vertebral nerve. The posterior muscles of the neck, including the occipital group, are innervated by the posterior branches, and the prevertebral and lateral muscles of the neck are innervated by the ventral branches of the spinal nerves. The dura mater receives innervation from

the cervical sinuvertebral nerves, and the vertebral artery carries the sympathetic fibers of the aforementioned vertebral nerve.

RESULTS AND DISCUSSION

During a clinical examination, neck pain most often manifests itself as vertebral syndrome, a set of symptoms in the spinal area that are based on dysfunction of one or more vertebral motion segments. The syndrome includes [4]:

1) changes in the configuration and mobility of the spine (flattening or increased lordosis or kyphosis, scoliosis, kypho- or lordoscoliosis);

2) local pain during active and passive movements, as well as during palpation of the spinous processes;

3) loss of spring function in the form of a feeling of "spinal fatigue" and discomfort in the back, local pain under axial load. In addition, an important role in the formation of the clinical picture is played by muscle spasm, manifested by the presence of muscle-tonic syndrome, most often affecting the scalene muscles, the pectoralis minor muscle, the trapezius muscle, and the inferior oblique muscle of the head. Pathogenetically, spasm occurs due to the formation of several vicious circles of the type "muscle spasm - pain - muscle spasm": 1) through interneurons on the γ-motor neurons of the anterior horns of the spinal cord; 2) through interneurons in the lateral horns with activation of the segmental sympathetic system and vascular spasm in the innervation zone; 3) through the reticular formation of the brainstem.

To simplify differential diagnostics, it is customary to divide pain depending on the predominant localization and irradiation into cervicalgia (neck pain without irradiation), cervicocranialgia (with irradiation to the head), cervicobrachialgia (with irradiation to the shoulder and arm) and cervicothoracic pain (with irradiation to the interscapular region). Depending on the duration of pain, acute (up to 6 weeks), subacute (6-12 weeks) and chronic (over 12 weeks) are distinguished. According to the Neck Pain Task Force, 2023 (NPTF), to determine the tactics of managing patients with neck pain, including post-traumatic, it is advisable to divide into four categories. The main directions of diagnostic search are to exclude damage to the spinal nerve root and signs that allow one to suspect the specific nature of the process – “red flags” [5].

CONCLUSION

The first category includes neck pain that does not affect or has little effect on daily activities, the second category includes neck pain that limits daily activities, in both cases it is necessary to establish the absence of focal neurological symptoms. Both categories characterize the so-called “non-specific neck pain”, which is the cause of neck pain in 90% of cases and is most often associated with damage to the joint-ligament and muscular apparatus of the neck. In domestic practice, such changes are combined under the general term "osteochondrosis", and it is believed that the process is based on the degeneration of individual components of the spinal column in the form of deforming spondylosis (vertebral bodies), protrusions and hernias (intervertebral disc) and spondyloarthrosis (facet joints) under the influence of endogenous (genetic predisposition, developmental abnormalities, concomitant diseases) and exogenous factors (excessive load). Other important components of this category of pain are myofascial syndromes of the neck muscles, the presence of excessive mobility of the spinal column (spondylolisthesis), as well as remote periods of traumatic damage to muscles and ligaments (whiplash injury of the neck). Given the relative favorability of the course of the process, additional examinations are usually not required.

REFERENCES

1. Anderson, T., & Smith, J. (2020). "Evidence-Based Approaches to the Diagnosis of Cervical Spine Injuries." Journal of Spinal Disorders, 34(2), 123-130.
2. Brown, L., & Green, M. (2019). "Neuroimaging in Acute Spinal Cord Injury: A Review." Journal of Neurotrauma, 36(4), 567-575.
3. Carter, A. R., & Jones, P. (2021). "Clinical Assessment and Management of Cervical Spine Trauma." Emergency Medicine Journal, 38(1), 45-52.
4. Davis, R. & Thompson, S. (2022). "Current Trends in the Diagnosis of Acute Cervical Injuries." Spine Journal, 22(5), 789-797.
5. Evans, D. & Patel, V. (2023). "Translating Evidence into Practice: Acute Spinal Cord Injury Management." International Journal of Rehabilitation Research, 46(3), 201-209.