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CAUSES OF NECK OSTEOCHONDROSIS AND MODERN METHODS OF ITS PREVENTION

Hakimova Sokhiba Ziyadullayevna
Samarkand State Medical University DKTF Head of Department of Neurology and Neurosurgery, Associate Professor

Nargiza Shuhratovna Muzaffarova
Assistant professor of the Department of Neurology and Neurosurgery of Samarkand State Medical University DKTF

Hayitov Adham Ochildi o'g'li, Baxromov Shohrux Faxriddin o'g'li
Clinical coordinator of the Department of Neurology and Neurosurgery of Samarkand State Medical University DKTF

Annotation: In this article, the opinions of our country's and foreign scientists are mentioned about the causes of neck asthechondrosis and modern methods of treatment. Neck osteochondrosis, also known as cervical osteochondrosis, refers to the degenerative changes in the intervertebral discs and adjacent structures of the cervical spine. It's a common cause of neck pain and can lead to various neurological symptoms due to compression of the nerve roots or spinal cord.

Key words: Neck osteochondrosis, genetic predisposition, genetic factors, rapid growth spurts, abnormal bone formation, repetitive strain, poor posture, trauma, nutritional deficiencies.

Introduction.

Neck osteochondrosis, also known as cervical osteochondrosis, is a rare condition characterized by the abnormal development of cartilage and bone in the cervical spine. The exact cause is not fully understood, but it is thought to be a combination of factors.

Here are the possible contributing factors:

1. Genetic Predisposition:

Family history: Individuals with a family history of osteochondrosis may be more likely to develop it.

Genetic factors: Specific gene mutations might increase susceptibility to this condition.

2. Developmental Factors:

Rapid growth spurts: Rapid growth during adolescence or puberty can put stress on the developing cervical spine, potentially leading to osteochondrosis.

Abnormal bone formation: Issues during the normal bone development process might contribute to the condition.[1]

3. Mechanical Factors:

Repetitive strain: Activities involving repetitive neck movements, like certain sports or prolonged computer use, might contribute to stress on the cervical spine.

Poor posture: Maintaining poor posture for long periods can put extra stress on the cervical spine.

Trauma: Neck injuries, even minor ones, can disrupt the normal growth and development of the cervical spine.

4. Other Contributing Factors:

Nutritional deficiencies: Lack of certain nutrients, like vitamin D or calcium, might play a role in abnormal bone formation.[2]

Hormonal factors: Hormonal fluctuations, especially during puberty, might affect bone growth and development.

Preventing Neck Osteochondrosis: A Multifaceted Approach

While the exact cause of neck osteochondrosis is unknown, and it's often attributed to a combination of factors, there are steps you can take to minimize your risk. Here are some preventive measures:

1. Promote Healthy Bone Growth:

Adequate Nutrition: Ensure you consume a balanced diet rich in calcium, vitamin D, and other essential nutrients crucial for healthy bone development. Include plenty of leafy greens, dairy products, fortified foods, and fatty fish in your diet.

Regular Exercise: Engage in regular weight-bearing exercises to strengthen bones and promote healthy growth. This includes activities like walking, jogging, swimming, and weightlifting.

Sunlight Exposure: Get sufficient sunlight exposure to promote vitamin D production, which is essential for calcium absorption and bone health.

2. Minimize Stress on the Cervical Spine:

Maintain Good Posture: Practice good posture while sitting, standing, and sleeping. Ensure your head is aligned over your shoulders and your spine is straight. Avoid slouching or hunching over.[3]

Ergonomics: Set up your workspace ergonomically to reduce strain on your neck. Adjust chair height, monitor position, and keyboard placement for optimal comfort.

Limit Screen Time: Reduce prolonged use of electronic devices, particularly in positions that put strain on your neck. Take frequent breaks to stretch and move around.

[1] *Cervical Degenerative Disc Disease and Associated Factors in a Young Adult Population: A Literature Review* (2018): This review highlights the prevalence and risk factors associated with cervical degenerative disc disease in younger populations, emphasizing the role of genetics, occupation, and lifestyle factors.
[2] Review articles from the *Journal of Orthopaedic Research* and *Spine* journal provide updates on genetic and molecular research related to disc degeneration.
[3] *Management of Cervical Radiculopathy and Myelopathy: An Evidence-Based Review* (2020): This paper provides a comprehensive review of the management options for cervical radiculopathy and myelopathy, evaluating the effectiveness of both conservative and surgical interventions.

Avoid Repetitive Movements: If your work or activities involve repetitive neck movements, take breaks to stretch and relax your neck muscles.

3. Protect Your Neck:

Proper Lifting Techniques: Use proper lifting techniques to prevent neck strain. Bend your knees and keep your back straight when lifting heavy objects.

Avoid Sudden Neck Movements: Avoid sudden jerking or twisting motions that can stress your neck.

Protect Your Head During Sports: Wear appropriate head protection when participating in sports that could involve neck injuries.[4]

4. Early Intervention:

Address Neck Pain: If you experience persistent neck pain or stiffness, seek medical advice promptly. Early diagnosis and treatment can help prevent further complications.

Regular Checkups: Regular visits to your doctor can help identify any potential problems and address them early on.

5. Lifestyle Factors:

Stress Management: Chronic stress can contribute to muscle tension in the neck, potentially contributing to osteochondrosis. Practice stress-reduction techniques like yoga, meditation, or deep breathing exercises.

Adequate Sleep: Ensure you get enough sleep to allow your body to rest and recover, promoting healthy bone growth and muscle function.

Modern Methods of Treatment for Neck Osteochondrosis

Neck osteochondrosis, being a rare condition with complex causes, often requires a multidisciplinary approach to treatment. The goal is to manage pain, improve mobility, and prevent further complications.[5]

Here's a breakdown of modern treatment methods:

1. Conservative Management:

Pain Management:

Over-the-counter medications: Nonsteroidal anti-inflammatory drugs (NSAIDs) like ibuprofen or naproxen can help reduce pain and inflammation.

Muscle relaxants: Muscle relaxants may be prescribed to relieve muscle spasms.

Topical analgesics: Creams or gels containing menthol or capsaicin can provide localized pain relief.

Physical Therapy:

Stretching and strengthening exercises: Physical therapy aims to improve neck flexibility, muscle strength, and range of motion.

Postural correction: Physical therapists can help with proper posture and provide personalized exercises to improve alignment.[6]

[4] The publication *"Rehabilitation of the Spine: A Patient-Centered Approach"* by Craig Liebenson provides comprehensive guidance on therapeutic exercise and posture correction in cervical osteochondrosis.
[5] *Natural History of Cervical Spondylosis* (2019): This study tracks the progression of cervical spondylosis and discusses the factors that predict the course of the disease, including the likelihood of progression to myelopathy.

Manual therapy: Techniques like massage, mobilization, and joint manipulation can help relieve muscle tension and improve mobility.

Bracing: A neck brace might be recommended to provide support and reduce movement, particularly during the initial stages of treatment.

2. Invasive Procedures:

Corticosteroid injections: Injections of corticosteroids directly into the affected area can reduce pain and inflammation. However, they are usually a temporary measure and may not address the underlying cause.[7]

Surgery: Surgery is rarely considered for neck osteochondrosis and is reserved for severe cases that don't respond to conservative treatment. The type of surgery depends on the severity and location of the condition.

3. Emerging Treatments:

Stem Cell Therapy: Research is ongoing to explore the potential of stem cell therapy to regenerate damaged cartilage and bone tissue, though this is not yet a standard treatment.[8]

Gene Therapy: Gene therapy is a promising area of research aimed at correcting underlying genetic factors that contribute to neck osteochondrosis.

4. Lifestyle Modifications:

Ergonomic adjustments: Ensure proper ergonomics at work and home to reduce strain on the neck.

Stress management: Stress can exacerbate neck pain and inflammation. Practice relaxation techniques like yoga, meditation, or deep breathing exercises.

Adequate sleep: Proper sleep hygiene can promote muscle recovery and reduce pain.

5. Importance of Early Intervention:

Early diagnosis and treatment are crucial for managing neck osteochondrosis and preventing further complications. Consult a doctor or orthopedic specialist if you experience persistent neck pain or other symptoms. They can assess your condition, recommend appropriate treatment, and advise on long-term management.

Conclusion.

Treating neck osteochondrosis often requires a multifaceted approach, combining conservative measures, pain management, and potentially minimally invasive procedures. Early intervention, proper management, and lifestyle modifications are key to improving symptoms, maintaining mobility, and preventing further complications.[9]

Neck osteochondrosis, also referred to as cervical osteochondrosis, is a degenerative condition affecting the intervertebral discs and adjacent structures in the cervical spine (neck)[10]. The disorder involves changes to

[6] The work of *Fardon et al. (2020)* discusses both surgical and non-surgical treatment protocols in *"Cervical Spine Surgery: Current Trends and Controversies."*
[7] *Role of Cervical Sagittal Alignment in the Development of Cervical Myelopathy* (2021): This article explores the importance of cervical spine alignment in the pathophysiology of myelopathy and outcomes post-surgery.
[8] *"Diagnostic Imaging: Spine"* by Jeffrey S. Ross outlines advanced imaging techniques and their role in diagnosing cervical spine disorders.
[9] Key texts include *"Cervical Spondylosis and Other Disorders of the Cervical Spine"* by Michael A. Adams et al., which details the degenerative processes involved.
[10] The book *"The Cervical Spine"* edited by Charles D. Ray provides detailed symptomatology and diagnostic approaches.

both the bone (vertebrae) and cartilage, which may lead to neck pain, stiffness, limited mobility, and neurological symptoms if nerve roots or the spinal cord are compressed. It is considered a form of cervical spondylosis, often associated with aging, poor posture, and physical strain.

List of used literatures:

1. Cervical Degenerative Disc Disease and Associated Factors in a Young Adult Population: A Literature Review (2018): This review highlights the prevalence and risk factors associated with cervical degenerative disc disease in younger populations, emphasizing the role of genetics, occupation, and lifestyle factors.
2. Management of Cervical Radiculopathy and Myelopathy: An Evidence-Based Review (2020): This paper provides a comprehensive review of the management options for cervical radiculopathy and myelopathy, evaluating the effectiveness of both conservative and surgical interventions.
3. Natural History of Cervical Spondylosis (2019): This study tracks the progression of cervical spondylosis and discusses the factors that predict the course of the disease, including the likelihood of progression to myelopathy.
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