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ADVANTAGES OF ULTRASONIC EXAMINATION OF JOINTS IN THE DIAGNOSIS OF DISEASES OF THE MUSCULOSKELETAL SYSTEM

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Аннотация: Ультразвуковое исследование (УЗИ) представляет собой один из наиболее доступных и информативных методов визуализации в современной медицинской практике, особенно при оценке состояния суставов. Цель настоящего исследования — анализ эффективности УЗИ в диагностике заболеваний опорно-двигательного аппарата, с акцентом на выявление воспалительных и дегенеративных изменений в суставах. В статье представлены результаты клинического наблюдения, подтверждающие диагностическую ценность УЗИ по сравнению с другими методами визуализации. Показано, что метод позволяет точно и безопасно диагностировать изменения в мягкотканевых и костных структурах, а также контролировать динамику заболевания.

Ключевые слова: ультразвуковое исследование, суставы, диагностика, опорно-двигательный аппарат, синовит, артрит

Annotatsiya: Ultratovush tekshiruvi (ultratovush) zamonaviy tibbiy amaliyotda, ayniqsa bo'g'imlarning holatini baholashda eng qulay va informatsion tasvirlash usullaridan biridir. Ushbu tadqiqotning maqsadi bo'g'imlarda yallig'lanish va degenerativ o'zgarishlarni aniqlashga qaratilgan mushak — skelet tizimining kasalliklarini tashxislashda ultratovush samaradorligini tahlil qilishdir. Maqolada ultratovush tekshiruvining boshqa tasvirlash usullariga nisbatan diagnostik qiymatini tasdiqlovchi klinik kuzatuv natijalari keltirilgan. Usul

yumshoq to'qimalar va suyak tuzilmalaridagi o'zgarishlarni aniq va xavfsiz tashxislash hamda kasallik dinamikasini nazorat qilish imkonini berishi ko'rsatilgan.

Kalit so'zlar: ultratovush, bo'g'inlar, diagnostika, mushak-skelet tizimi, sinovit, artrit

Annotation: Ultrasound is one of the most accessible and informative imaging methods in modern medical practice, especially when assessing the condition of joints. The purpose of this study is to analyze the effectiveness of ultrasound in the diagnosis of diseases of the musculoskeletal system, with an emphasis on the detection of inflammatory and degenerative changes in the joints. The article presents the results of clinical observation confirming the diagnostic value of ultrasound in comparison with other imaging methods. It has been shown that the method allows accurate and safe diagnosis of changes in soft tissue and bone structures, as well as monitoring the dynamics of the disease.

Keywords: ultrasound examination, joints, diagnostics, musculoskeletal system, synovitis, arthritis

Abstract : Ultrasound inspection (ultrasound) modern medical in practice , especially of the joints status in evaluation the most comfortable and informative to describe from the methods is one . This of the research purpose in the joints inflammation and degenerative changes to determine aimed at muscle — skeleton system diseases in diagnosis ultrasound efficiency analysis to do . In the article ultrasound inspection other to describe to the methods relatively diagnostic value confirmatory clinical observation results cited . Method soft tissues and bone in the structures changes clear and safe diagnosis and disease dynamics control to do opportunity to give shown .

Key words : ultrasound, syllables, diagnostics, musculoskeletal system, synovitis, arthritis

Introduction. Joint disease is one of the most common problems among people of all ages. Pain, swelling, limited mobility and discomfort can be signs of serious disorders in the joints, such as arthritis, arthrosis, bursitis, tendonitis and others [1,6] . In order to identify these problems in a timely manner and prevent the development of complications, it is important to undergo regular examinations. One of the most effective and safe methods for diagnosing joint diseases is ultrasound (ultrasound of the joints) . Diseases of the musculoskeletal system (ODA), including inflammatory, degenerative and traumatic joint lesions, are a pressing medical and social problem [3,7]. . Modern diagnostics requires a comprehensive approach using instrumental visualization methods. [2,8]. . Among them, ultrasound examination (US) occupies a special place as a non-invasive, accessible and highly informative method. Ultrasound allows real-time assessment of the joint structure, detection of synovitis, effusion, erosion, enthesopathies and other pathological changes [4,5] . Unlike radiography and MRI, the method is not associated with radiation exposure, is more economically accessible and can be used repeatedly to monitor the patient's condition . The advantages of the ultrasound method are manifested in the ability to conduct studies of soft tissues that cannot be seen on an X-ray. Ultrasound of joints allows the doctor to clearly see the objects under study, which can only be studied using CT and MRI. Ultrasound also allows you to recognize soft tissue injuries, such as muscle and tendon ruptures, subcutaneous and intermuscular hematomas, tumors and tumor-like neoplasms and other injuries to the musculoskeletal system, which allows you to correctly diagnose and speed up the recovery process.

Using ultrasound – high-quality diagnostics at an affordable price. Ultrasound in traumatology and orthopedics is an important tool in the diagnosis and treatment of injuries and other pathologies of the musculoskeletal system. Early diagnosis of

even minor initial changes in diseases of the musculoskeletal system using harmless ultrasound, which is available to almost all patients, will help to establish a diagnosis in time and begin treatment [2,4] .

Materials and methods. A prospective study was conducted A single-center observational study involving 60 patients who sought treatment at the rheumatology department of the multidisciplinary regional hospital in Bukhara with complaints of pain, swelling, and limited movement in the joints.

Inclusion criteria: patients aged 18 to 75 years with suspected inflammatory and degenerative joint diseases (rheumatoid arthritis, osteoarthritis, seronegative arthropathies).

Patients with severe joint deformation that did not allow ultrasound examination, active infection, and malignant neoplasms were excluded.

The study was conducted on a GE device. Logic P 9 (USA), using a 7.5-12 MHz linear transducer. Standard protocols included assessment of the joint space, capsule, synovium , effusion, and adjacent structures. All studies were performed by one specialist with more than 10 years of experience. Synovitis assessment using the OMERACT scale (0-3 points).

An additional 30 patients underwent X-ray and/or MRI. Clinical data included DAS 28, VAS, CRP, ESR, RF, and ACPA.

Statistical analysis was performed in Statistica 12.0, data are presented as mean ± standard deviation. Significance according to Student's t-test, $p < 0.05$.

Results

The study included 60 patients: 42 women and 18 men, average age 49.3 ± 11.2 years. Distribution by diagnoses: RA - 26, osteoarthritis - 18, psoriatic arthritis - 6, reactive arthritis - 10.

Synovitis: detected in 80% of patients, of which grade 1 - 21, grade 2 - 19, grade 3 - 8. Intra-articular effusion - 61.7%, erosions - 20%.

Ultrasound showed a sensitivity to synovitis of 93% versus 97% for MRI and 26% for X-ray. Correlation with CRP was $r = 0.68$ ($p < 0.05$).

Clinical case: patient K., 54 years old. Grade 2 synovitis, hypervascularization , positive dynamics against the background of methotrexate therapy (decrease in VAS, effusion and CRP).

Discussion

Ultrasound has shown high information content in detecting synovitis, effusion, enthesopathies . Ultrasound does not expose the patient to radiation, which makes it safe even for children and pregnant women. Ultrasound also allows assessing the condition of joints in motion, which is important for diagnosing ligament and tendon injuries. The method is safe, accessible, does not require contrast and can be used repeatedly. The results obtained coincide with the data of D ' Agostino et al . (2017), where the sensitivity of the method reaches 94%. Standardized scales (OMERACT) allow for an objective assessment of inflammation.

Conclusion

Ultrasound of joints is a highly effective method for diagnosing musculoskeletal diseases. It allows detecting changes in soft tissues and monitoring the dynamics of inflammation, especially in the early stages. The method is recommended to be included in standard examination protocols for rheumatological patients. The priority of ultrasound methods for examining the musculoskeletal system is its simplicity, accessibility and safety for the patient. Unlike X-rays, the ultrasound method also allows obtaining information about the soft tissues surrounding the joints (joint bags, cartilage, ligaments, joint cavities).

Using ultrasound, you can assess the following parts of the musculoskeletal system: shoulder, knee, elbow, ankle and wrist joints, as well as the cervical spine.

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