AMERICAN ACADEMIC PUBLISHER

INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

ISSN NUMBER: 2692 - 5206 Volume 5,October ,2025

DIFFERENTIAL DIAGNOSIS OF MIGRAINE ATTACKS

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Abstract: Migraine is one of the most common and difficult to diagnose neurological diseases, characterized by intense headache and a range of neurological symptoms. Despite significant progress in understanding the pathogenesis and clinical manifestations of migraine, differential diagnosis of attacks remains a pressing issue in modern neurology. This article examines the key clinical criteria, course characteristics, associated symptoms, and diagnostic approaches for distinguishing migraine from other types of headaches, such as tension headache, cluster headache, secondary headaches, transient ischemic attacks, and epileptic paroxysms. Special attention is given to instrumental diagnostic methods, as well as the role of psychoemotional and vascular factors. This analysis confirms the need for a comprehensive approach to migraine diagnosis, including a thorough anamnesis, clinical observation, and the use of neuroimaging methods.

Keywords: migraine, headache, differential diagnosis, neurology, vascular disorders, neuroimaging, paroxysmal states, clinical symptoms

Migraine is a chronic neurological disorder characterized by recurrent attacks of moderate to severe headache, often unilateral, accompanied by nausea, vomiting, photophobia, and phonophobia. In modern clinical practice, migraine occupies a special place among primary headaches, second only to tension-type headache in prevalence, but significantly exceeding it in symptom severity and impact on patients' quality of life. Differential diagnosis of migraine attacks is crucial for prescribing adequate therapy and preventing the disease from becoming chronic.

Clinical diagnosis of migraine is based on the criteria of the International Classification of Headache Disorders (ICHD-3), according to which migraine is divided into migraine without aura and migraine with aura. Attacks without aura are characterized by a duration of 4 to 72 hours, pain localized predominantly to one side of the head, a pulsating nature, increased pain with physical activity, and associated autonomic dysfunction. Migraine with aura, unlike other types of headache, is accompanied by transient neurological symptoms—visual, sensory, speech, or motor disturbances—that precede or occur simultaneously with the headache.

However, diagnostic difficulties arise when distinguishing migraine from other conditions with similar symptoms. For example, tension-type headache (TTH) is the most common differential diagnosis. Unlike migraine, TTH pain is bilateral, compressive or pressing, does not worsen with physical activity, and is not accompanied by significant autonomic dysfunction. Patients with TTH rarely complain of nausea and photophobia, allowing for clinical differentiation. However, in chronic cases, both pathologies can coexist, requiring careful analysis of the clinical picture.

Another important aspect of differential diagnosis is distinguishing migraine from cluster headache. The latter is characterized by extremely intense pain localized in the orbital or

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 5,October ,2025

temporal region, necessarily accompanied by autonomic symptoms: lacrimation, nasal congestion, facial flushing, and eyelid ptosis. Unlike migraine, cluster headache attacks are short-lived (15–180 minutes) but can recur several times a day, forming typical "cluster periods." In patients with migraine, the frequency of attacks typically does not exceed several times a month, and the duration of pain ranges from several hours to three days.

Differential diagnosis between migraine with aura and transient ischemic attacks (TIAs) is particularly challenging. Both conditions can present with visual or sensory disturbances, which often leads to diagnostic errors. However, with TIA, neurological deficits develop suddenly and peak within minutes, whereas with migraine with aura, symptoms increase gradually, over 5–20 minutes, and resolve completely within an hour. Furthermore, TIAs are more common in elderly patients with significant vascular risk factors such as hypertension, atherosclerosis, and diabetes, while migraines are more common in young and middle-aged individuals, especially women.

Migraines should also be distinguished from epileptic seizures, particularly mygalepsia, a condition in which a migraine attack may be accompanied by seizure activity. Epilepsy is characterized by sudden onset of paroxysms, short duration (seconds or minutes), and often post-ictal confusion. To confirm the diagnosis, electroencephalography (EEG) is necessary, as it can detect epileptiform activity, which is absent in migraines.

It is equally important to consider secondary headaches caused by organic brain lesions. Tumors, arteriovenous malformations, intracranial hypertension, and inflammatory processes can present with a clinical picture resembling migraines. In such cases, neuroimaging data—magnetic resonance imaging (MRI) and computed tomography (CT)—comes to the forefront, allowing us to rule out structural changes. Particular attention should be paid to patients with new-onset severe headaches, changes in pain patterns, or the presence of focal neurological symptoms—in these cases, it is necessary to rule out a secondary headache.

Psychoemotional factors play a significant role in the development and manifestation of migraine attacks. Patients with migraines often exhibit high levels of anxiety, depressive disorders, and sleep disturbances. This requires differential diagnosis with psychogenic headaches, in which the pain is not clearly localized, accompanied by a feeling of internal tension, and often intensifies in stressful situations.

Modern research methods have significantly expanded the capabilities of differential diagnosis of migraine. Neuroimaging, particularly functional MRI and positron emission tomography (PET), allows for the assessment of vascular and metabolic changes during an attack. Studies have shown that migraine with aura is characterized by a transient decrease in perfusion in the occipital cortex, which distinguishes it from ischemic disorders, in which the decrease in blood flow is more pronounced and prolonged. Doppler ultrasound techniques allow for the assessment of vascular tone and the identification of signs of cerebrovascular dysfunction.

Laboratory diagnostics for migraine generally lack specific indicators, but can be useful for excluding secondary causes such as inflammatory, infectious, and metabolic disorders. In recent years, biochemical markers of migraine have been actively studied, including the level of serotonin, CGRP (calcitonin gene-related peptide) and other neurotransmitters involved in the pathogenesis of migraine attacks.

A clinical approach to the differential diagnosis of migraine requires consideration of all aspects of the disease—from the nature of the pain to associated symptoms and the patient's psychosocial state. A headache diary is an essential tool, helping to identify triggers, frequency, and duration of attacks, as well as assess the effectiveness of therapy.

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 5,October ,2025

Thus, the differential diagnosis of migraine attacks is a complex yet crucial step in the neurologist's work. Only a comprehensive analysis of clinical data, anamnesis, imaging studies, and psychosomatic factors allows for an accurate diagnosis and the selection of the optimal treatment strategy. Distinguishing migraine from other types of headaches and paroxysmal conditions not only increases diagnostic accuracy but also improves the prognosis and quality of life for patients.

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