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CLINICAL COMPLEXITIES IN EMERGENCY STROKE DIAGNOSIS: A MULTI-CASE ANALYSIS OF MIMICS AND CHAMELEONS

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Stroke remains a significant global health burden as the second leading cause of mortality worldwide, with approximately 13.7 million new cases reported annually. The accurate diagnosis of acute ischemic stroke (AIS) in emergency settings is crucial for implementing time-sensitive interventions such as intravenous thrombolysis (IVT) and mechanical thrombectomy (MT). However, the diagnostic process is complicated by the presence of stroke mimics (SMs) and stroke chameleons (SCs), which can lead to misdiagnosis, unnecessary treatments, and adverse outcomes.

This study aims to enhance the identification and differentiation of true strokes versus false strokes in emergency settings by presenting and analyzing rare cases of SMs and SCs. The research focuses on categorizing these cases by distinct subject modes to reduce misdiagnosis rates and improve patient outcomes in emergency stroke care.

A retrospective case series was conducted at the Affiliated Hospital of Guangdong Medical University, analyzing nine cases presenting with acute onset symptoms suggestive of stroke. Cases were systematically categorized into three distinct groups: epilepsy, metabolic disorders, and myelopathy. The diagnostic workup included comprehensive neuroimaging with computed tomography (CT), magnetic resonance imaging (MRI), video electroencephalogram (VEEG), and relevant laboratory tests. The study adhered to established ethical guidelines and obtained written informed consent from all participants.

The epilepsy category (n=3) included cases of MOG antibody-positive encephalitis, cardiac myxoma with symptomatic epilepsy, and post-hemorrhage epilepsy, all initially misdiagnosed as AIS. The metabolic disorders group (n=3) comprised cases of diabetes presenting with stroke-like symptoms and hyperkalemia masking true stroke, highlighting the complexity of concurrent conditions. The myelopathy category (n=3) included cases of spontaneous spinal epidural hematoma, cervical spondylosis, and neuromyelitis optica, emphasizing the importance of spinal imaging in certain presentations.

Multimodal imaging techniques proved essential in distinguishing true strokes from mimics, while careful clinical assessment helped identify chameleons. The study revealed that excessive pursuit of diagnostic accuracy could potentially compromise time-sensitive treatment opportunities, particularly in cases where metabolic disorders coexisted with true strokes.

Early identification of SMs and SCs is crucial but should not compromise timely treatment administration. The implementation of multimodal CT and rapid diagnostic approaches is recommended for accurate diagnosis, particularly in cases with uncertain presentations. While diagnostic precision is important, the risk of delaying IVT to exclude SMs may exceed the risk of administering IVT in SM cases. This case series emphasizes the need for balanced decision-making in emergency stroke diagnosis, considering both accuracy and time-sensitivity of interventions. The findings suggest that a 15-minute delay in treatment to improve diagnostic accuracy may risk outcomes for 99% of patients to identify 1% with stroke mimics.