

LETTERS TO THE EDITOR

Importance of CT-perfusion in the diagnosis of nonconvulsive status epilepticus in the emergency department: a case report

Valor de la TC de perfusión para el diagnóstico de estatus epiléptico no convulsivo en urgencias: reporte de un caso

To the editor:

Non-convulsive status epilepticus requires electroencephalographic confirmation for its diagnosis and management and is not always available in emergency departments. It often poses diagnostic challenges with other acute neurological pathologies, especially when it presents as a focal neurological deficit. In these cases, it is not uncommon for out-of-hospital emergency services to activate the stroke code. The increasing use of perfusion computed tomography (CT) in the initial management of these patients may help to establish a correct early diagnosis.

A 68-year-old woman with a relevant history of refractory arterial hypertension and chronic kidney disease on hemodialysis. She was evaluated by out-of-hospital emergency services and managed as code stroke of unknown onset. In the emergency room she presented with blood pressure of 200/130 mmHg and left hemispheric syndrome with forced crossed ocular deviation (to the right) and nystagmoid beats to the right on neurological examination. A baseline cranial CT scan showed no evidence of hemorrhage or early signs of ischemia, and a multiphase CT angiography showed no repletion defects. The CT-perfusion showed a pattern of blood hyperflow in the left parietal-to-occipital region (Figure 1), not specific in vascular pathology but suggestive of status epilepticus. The stroke code was deactivated, and the diagnosis was confirmed by videoelectroencephalography, which recorded an ictal electroencephalographic pattern in the left parietal-to-occipital region. Consecutive administration of 6 mg of midazolam, 3000 mg of levetiracetam, 200 mg of lacosamide intravenously and 16 mg of perampanel orally achieved clinical and electroencephalographic control. He was admitted to the intensive care unit where blood pressure figures were normalized with clevidipine perfusion. Cranial magnetic resonance imaging showed reversible posterior encephalopathy, probably related to refractory hypertension and

chronic renal disease. Complete recovery of the clinical situation was achieved on the hospital ward, and she was discharged asymptomatic on bitherapy with levetiracetam and lacosamide.

According to some series, up to 16% of code strokes are finally classified as stroke-mimics¹ and 4% of seizures after a complete multimodal study.² Therefore, a rigorous anamnesis and neurological examination together with a high level of clinical suspicion is essential to avoid misdiagnosis and deleterious treatment.

The use of perfusion CT as part of the multimodality CT study for the initial assessment of acute stroke has recently become widespread in emergency departments. According to some retrospective series, up to 26% of stroke-mimics show alterations in CT-perfusion.¹ Patterns of hyper- and hypoperfusion have been observed that are not usually restricted to a vascular territory.³⁻⁵ These have been mainly related to seizures and status epilepticus (40%).¹

Therefore, the incorporation of CT-perfusion in the diagnostic algorithm of acute neurological focal pathology without evidence of large vessel occlusion should be evaluated within a

multimodal assessment protocol for status epilepticus that optimizes time and facilitates early treatment.

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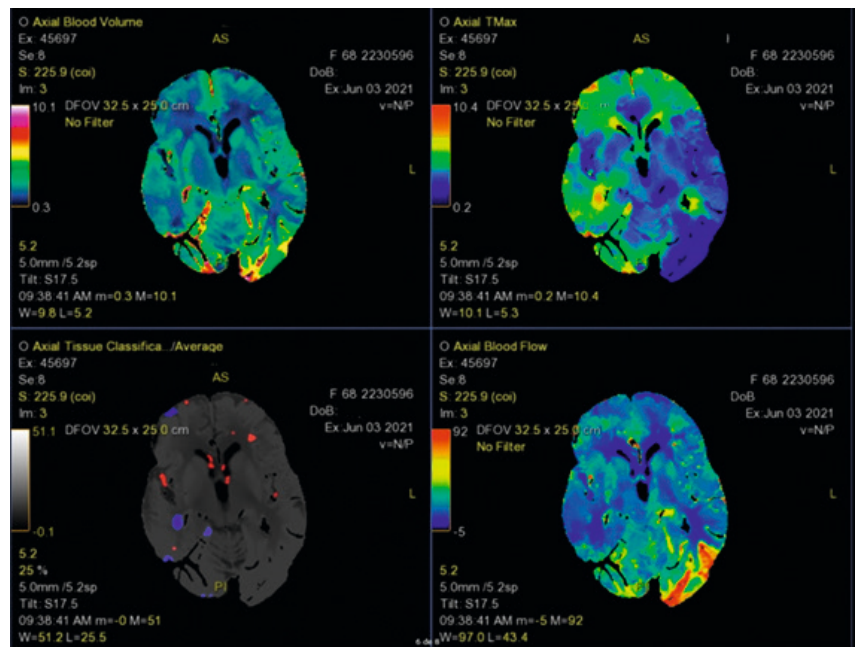


Figure 1. Perfusion computed tomography of the patient during her evaluation in the emergency department. Hyperperfusion pattern is observed in the left parietal-to-occipital region with increased cerebral blood flow (lower right), increased cerebral blood volume (upper left) and shortened mean transit time (upper right).

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