

Brain structural integrity alterations in epilepsy with myoclonic seizures

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Background. Recurrent myoclonic seizures are associated with morphological changes in brain regions, engaging cortical as well as subcortical structures. The purpose of this study was to characterize the abnormalities of brain structural integrity in epilepsy patients with myoclonic seizures.

Material and methods. Surface-based morphometry was applied to process the 3T brain magnetic resonance images acquired in 11 epilepsy patients (mean age \pm standard deviation: 24 ± 6 years; 3 males) with myoclonic seizures and 11 healthy controls (28 ± 4 years; 6 males) and quantify the cortex thickness and subcortical volumes.

Results. Patients with myoclonic seizures in contrast to healthy controls showed significant cortical thickness alterations in left postcentral, and bilateral rostral middle frontal and supramarginal cortices ($p < 0.001$, uncorrected). Cortical thickness correlated with patients' disease duration in left superior, middle and inferior temporal, and inferior parietal and right supramarginal, inferior parietal and rostral anterior cingulate cortices. Volumetric analysis of subcortical structures disclosed significantly lower ($p = 0.014$, $p = 0.001$) thalamic volumes (right 7078.5 ± 508.7 / left 7804.1 ± 737.4 mm³) in patients compared to healthy controls (right 8155.9 ± 702.1 /left 9168.1 ± 1442.5 mm³).

Conclusions. These findings evidence clear widespread abnormalities of brain structural integrity linked to myoclonic seizures and represent the neuroanatomical fingerprints that potentially underlie the generation of this seizure type.

Key words: myoclonic seizures, cortical thickness, thalamic volume.

Portal hemodynamics disorders severity scoring by Doppler ultrasound in liver cirrhosis

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Background: Splenoportal hemodynamics assessment in portal hypertension syndrome is a well-known problem, due to the high incidence of this pathology and associated complications. The accuracy of employed diagnostic methods is of paramount importance as early diagnosis and appropriate management can certainly improve the prognosis and life expectancy of these patients. The study aim was to identify reliable Doppler measurements for developing a scoring system of portal flow alteration severity in liver cirrhosis and classification of these disturbances.

Material and methods: The study included 111 patients with liver cirrhosis. Ultrasound examinations were performed with a *Voluson E8* ultrasound system, using a 3.5-5 MHz convex transducer. The examination included B mode, color Doppler and pulse-wave Doppler techniques. All patients also underwent extended clinical and biological evaluation. Obtained data were processed using case-based reasoning, data segmentation and clusterization.

Results: A scoring system for severity of portal hemodynamics disorders in liver cirrhosis was developed based on five most relevant conventional and Doppler parameters. The scoring system allows classification of portal flow alterations as low, middle and high severity.

Conclusions: The developed scoring system can be used as a useful complementary tool in differential diagnosis of portal flow alterations in liver cirrhosis. The proposed score also allows a better dynamic imaging follow-up of patients with liver cirrhosis.

Key words: doppler ultrasound, portal hemodynamics, liver cirrhosis, diagnostic scoring system.