

# Mesial temporal lobe epilepsy differential diagnosis

**Focal cortical dysplasia Type II B** (FCD) is an important cause of **drug resistant epilepsy**. However, **balloon cells** located in the **medial temporal lobe** have been seldom reported. Mao et al. aimed to discuss the clinical and pathological features of Type IIB FCD with balloon cells in the medial temporal lobe (MTLE-FCDIIB) and the differential diagnosis with other types of **mesial temporal lobe epilepsy**.

Three MTLE-FCDIIB cases were enrolled from **Peking Union Medical College Hospital**. Clinical and neuroimaging data were analyzed and histology features observed on hematoxylin-eosin (H&E) staining and immunochemical staining, including vimentin, nestin, S-100, CD34, neuronal nuclei antigen (Neun), glial fibrillary acidic protein (GFAP), neurofilament heavy chain (SMI32), were discussed.

All cases involved drug-resistant epilepsy patients with childhood onset. The semiology of the epileptic seizure was a highly frequent partial seizure with or without generalized tonic-clonic seizures. Magnetic resonance imaging showed hyper-intensity in the medial temporal lobe without atrophy, different from mesial temporal sclerosis. Histological examination indicated the presence of balloon cells in the white matter of the para-hippocampal gyrus, subiculum, and cornu ammonis with cortical disorganization, and SMI32 positive dysmorphic neurons in the gray matter. Balloon cells were immunohistochemically stained with vimentin and nestin. Granular cell dispersion and pyramidal cell loss were not found.

The presence of **balloon cells** in the **medial temporal lobe** is observed in a rare subgroup of **focal cortical dysplasia** (FCD), named **Mesial temporal lobe epilepsy-Focal cortical dysplasia Type II B**. It has distinct clinical manifestations, neuroimaging features, pathological changes, and prognosis, which should be differentiated from **mesial temporal sclerosis** and mesial **temporal lobe tumors**. This findings enable more accurate diagnosis of **mesial temporal lobe epilepsy** <sup>1)</sup>.

<sup>1)</sup>  
Mao C, Jin L, Dou W, Lu Q, Zhou L, Ren H, Zhao Y, Feng F, Guo Y, Gao J. Type IIB focal cortical dysplasia with balloon cells in medial temporal lobe epilepsy: Clinical, neuroimaging, and histopathological findings. *Epilepsy Res.* 2019 Aug 13;157:106189. doi: 10.1016/j.epilepsyres.2019.106189. [Epub ahead of print] PubMed PMID: 31472401.

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