

Low-grade epilepsy-associated neuroepithelial tumor

Low-grade neuroepithelial tumours that present with early-onset focal epilepsy and are mostly seen in children and young adults (previously designated as long-term epilepsy-associated neuroepithelial tumours, LEAT) lack such innovative clinicopathological and molecular genetic tools. The Neuropathology Task Force of the International League against Epilepsy will critically discuss this issue, and offered perspectives on how to decipher and validate clinically meaningful LEAT entities using the current WHO approach that integrates clinicopathological and genetic classification systems ¹⁾.

Low-grade epilepsy-associated [neuroepithelial tumors](#) (LEATs) create a diagnostic challenge in daily practice and intraoperative pathological consultation (IC) in particular. [Intraoperative squash smear cytology](#) are extremely useful for accurate [diagnosis](#); however, the knowledge on cytopathologic features of LEATs is based on individual case reports. Kurtulan et al. discuss the 3 most common and well-established entities of LEATs: [ganglioglioma](#) (GG), [dysembryoplastic neuroepithelial tumor](#) (DNT), and [papillary glioneuronal tumor](#) (PGNT).

Thirty patients who underwent surgery for GG, DNT, and PGNT between 2001 and 2021 were collected. Squash smears prepared during intraoperative consultation were reviewed by 1 cytopathologist and an experienced neuropathologist.

Among the 30 tumors, 16 (53.3%) were GG, 11 (36.6%) DNT, and 3 (10%) PGNT. Cytomorphologically, all of the 3 tumor types share 2 common features such as dual cell population and vasculocentric pattern. GG smears were characteristically composed of dysplastic ganglion cells and piloid-like astrocytes on a complex architectural background of thin- to thick-walled vessels. DNT, on the other hand, showed oligodendroglial-like cells in a myxoid thin fibrillary background associated with a delicate capillary network. Common cytological features of PGNT were hyperchromatic cells with narrow cytoplasm surrounding hyalinized vessels forming a pseudopapillary pattern and bland cells with neuroendocrine nuclei dispersed in a neuropil background.

A higher diagnostic accuracy can be obtained when squash smears are applied with frozen sections. However, it is important to integrate clinical and radiologic features of the patient as well as to know the cytopathologic features of the LEAT spectrum in the context of differential diagnosis to prevent misinterpretation in the IC ²⁾.

¹⁾

Blümcke I, Aronica E, Becker A, Capper D, Coras R, Honavar M, Jacques TS, Kobow K, Miyata H, Mühlebner A, Pimentel J, Söylemezoğlu F, Thom M. Low-grade epilepsy-associated neuroepithelial tumours - the 2016 WHO classification. *Nat Rev Neurol*. 2016 Dec;12(12):732-740. doi: 10.1038/nrneurol.2016.173. Epub 2016 Nov 18. PMID: 27857123.

²⁾

Kurtulan O, Bilginer B, Soylemezoglu F. Challenges in the Intraoperative Consultation of Low-Grade Epilepsy-Associated Neuroepithelial Tumors by Cytomorphology in Squash Preparations. *Acta Cytol*. 2022 Jan 11:1-7. doi: 10.1159/000521249. Epub ahead of print. PMID: 35016169.

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Last update: **2024/06/07 02:53**

