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Glioblastoma, IDH-wildtype, with oligodendrocyte-like cells – a microscopic challenge

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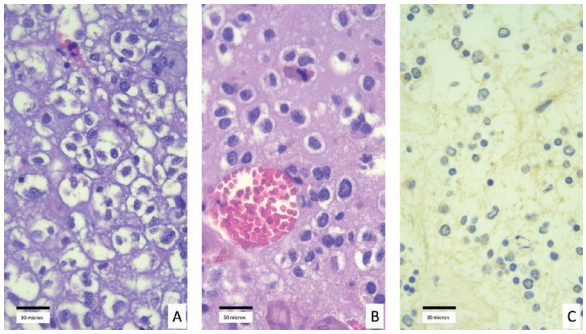

Figure 1. A – photomicrograph (haematoxylin-eosin stain, 40x), showing a neoplasm with oligodendroglioma-like aspects, i.e. round cells with clear perinuclear halos; **B** – photomicrograph (haematoxylin-eosin stain, 60x), where mitosis is evident; **C** – Immunohistochemistry for IDH R132H negative, indicating an IDH-wildtype profile (magnification: 40x)

A 71-year-old woman, who underwent surgery for a meningioma 13 years earlier, presented with an expansive lesion in the left cerebellar hemisphere at her last neuroradiological follow-up check, which was surgically excised. Microscopy showed a glial neoplasm (immunohistochemically positive for GFAP and Olig2) with: increased cellularity, atypia, mitosis and vascular proliferation. Noteworthy, was the presence of numerous round neoplastic cells with a clear perinuclear halo (fig. 1A–B), areas of 'chicken-wire' vascularization and microcalcifications: these constitute the classic histologic features of oligodendroglioma (OG). However, this morphological hypothesis was not supported by the molecular investigations, which instead showed a non-oligodendroglial lineage profile: IDH-wildtype by immunohistochemistry (fig. 1C) and 1p/19q non co-deleted (investigated by FISH method). On the basis of the integration of morpho-molecular data, the definitive diagnosis was therefore that of glioblastoma (GB), IDH-wildtype, with oligodendrocyte-like cells (GBO). GBO is a rare histological pattern of GB, reported in the latest World Health Organization classification of central nervous system tumours of 2021 [1], which should not be misdiagnosed as OG. Although both entities constitute forms of diffuse gliomas, distinguishing GBO from OG is not only a fine histological difference, but also and above all constitutes precise and important clinical-therapeutic information. Indeed, the two neoplasms differ in both their biological behaviour and prognosis, which are worse for GBO [1]. But even more important is the message that increasingly new differences are emerging in the molecular targets of medical therapy of the different types of glioma, some already approved and employed, others still undergoing clinical or laboratory studies [2].

References

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