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Introduction

Mattia Barbareschi[1,2], Marco Gessi[3], Felice Giangaspero[4]

[1] UOM Anatomia ed Istologia Patologica, S. Chiara Hospital, APSS, Trento, Italy; [2] CISMED - Centro Interdipartimentale di Scienze Mediche, University of Trento, Italy; [3] Neuropathology Unit, Fondazione Policlinico Universitario "A. Gemelli" IRCCS, Università Cattolica S. Cuore, Roma, Italy; [4] IRCCS Neuromed, Pozzilli, Isernia, Italy

The 2021 WHO Classification of Central Nervous System tumors is a major advance in the field of neuro-oncology and neuropathology and represents a good example of translation of current molecular findings into a new classification system and more precise diagnostic criteria. Compared to the previous edition, in this fifth edition the integration of phenotypic and molecular genetic information in diagnostic categories has significatively increased. Moreover, the integration of epigenetic data through methylation profiling is the distinctive feature of this edition.

In this issue of Pathologica, six review articles provide updates in the classification of major tumor categories relevant to diagnostic neuropathology according to the new WHO Classification. Antonelli and Poliani [1] discuss the current classification of diffuse gliomas in adults, including the role of ancillary molecular testing in identifying distinct tumor types (e.g., EGFR amplification, TERT promoter mutation, and +7/10 in glioblastoma, IDH wildtype) and grading (homozygous CDKN2A/B homozygous deletion in IDH mutant astrocytomas). Fabbri et al. [2] cover the pediatric counterpart of diffuse low-grade gliomas which include four distinct histo-molecular entities, namely diffuse astrocytoma MYB or MYBL1 altered, angiocentric glioma, polymorphous low-grade neuroepithelial tumour of the young (PLNTY) and diffuse low-grade glioma MAPK pathway-altered. Gianno et al. [3] focus on the issue of pediatric diffuse high grade gliomas giving practical information for their diagnosis discussing advantages and limits of the multiple molecular tests utilized to define the single entities of this complex tumor family. Bertero et al. [4] report the advances in the classification of ependymal neoplasms, which merging anatomic, histologic, immunohistochemical, sequencing, and methylation profiling has significantly improved the prognostic stratification of patients harboring such neoplasms. Barresi et al. [5] illustrate the new entities which expand the large group of glioneuronal and neuronal tumors. Such new entities include the diffuse glioneuronal tumor with oligodendroglioma-like cells and nuclear clusters (DGONC), myxoyd glioneuronal tumor (MGT) and multinodular and vacuolating neuronal tumour (MNVNT). Finally, Pizzimenti et al. [6] explore the gray zone existing between CNS neuroectodermal tumor and soft tissue sarcoma describing the clinical, histological and molecular features of rare neoplasms, now included in the fifth edition of WHO classification, such as CNS tumors with BCOR internal tandem duplication, intracranial mesenchymal tumor with *FET*/*CREB* fusion, CNS *CIC*-rearranged sarcomas and primary intracranial sarcoma *DICER1*-mutant.

We take the opportunity to dedicate this issue to the memory of Prof. Antonio Allegranza (1918-2000) [7]. Antonio Allegranza has been one of the very few anatomic-pathologists, at his time, who dedicated his whole professional life to neuropathology and to the pathology of brain

tumors. He published more than 80 papers, and, for two of us (MB and FG) was the first teacher in neuropathology allowing us to study several aspects of brain pathology [8-12]. He served as neuropathologist at the psychiatric hospital "Paolo Pini" in Milan and at the "C. Besta Neurological Institute" in Milan, where he remained until his retirement in 1993. His rich collection has been the source of one of his last commitments, a color atlas of brain tumor pathology edited in 1994 [13]. We are pleased to honor his memory with this issue of our journal hoping that it will be a useful tool for pathologists interested in neuropathology.

References

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