ABSTRACT

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The landscape of brain tumor mimics in neuro-oncology practice.

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BACKGROUND AND OBJECTIVE: Differentiating neoplastic and non-neoplastic brain lesions is essential to make management recommendations and convey prognosis, but the distinction between brain tumors and their mimics in practice may prove challenging. The aim of this study is to provide the incidence of brain tumor mimics in the neuro-oncology setting and describe this patient subset.

METHODS: Retrospective study of adult patients referred to the Division of Neuro-oncology for a presumed diagnosis of brain tumor from January 1, 2005 through December 31, 2017, who later satisfied the diagnosis of a non-neoplastic entity based on neuroimaging, clinical course, and/or histopathology evaluation. We classified tumor mimic entities according to clinical, radiologic, and laboratory characteristics that correlated with the diagnosis.

RESULTS: The incidence of brain tumor mimics was 3.4% (132/3897). The etiologies of the non-neoplastic entities were vascular (35%), inflammatory non-demyelinating (26%), demyelinating (15%), cysts (10%), infectious (9%), and miscellaneous (5%). In our study, 38% of patients underwent biopsy to determine diagnosis, but in 26%, the biopsy was inconclusive.

DISCUSSION: Brain tumor mimics represent a small but important subset of the neuro-oncology referrals. Vascular, inflammatory, and demyelinating etiologies represent two-thirds of cases. Recognizing the clinical, radiologic and laboratory characteristics of such entities may improve resource utilization and prevent unnecessary as well as potentially harmful diagnostic and therapeutic interventions.

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