THE AMERICAN JOURNAL OF SURGICAL PATHOLOGY

Wolters Kluwer Health | Lippincott Williams & Wilkins

The American Journal of Surgical Pathology:
February 2010 - Volume 34 - Issue 2 - pp 147-160
doi: 10.1097/PAS.0b013e3181c75238
Original Articles

Anaplasia in Pilocytic Astrocytoma Predicts Aggressive Behavior

Rodriguez, Fausto J. MD; Scheithauer, Bernd W. MD; Burger, Peter C. MD; Jenkins, Sarah MS; Giannini, Caterina MD, PhD

Abstract

The clinical significance of anaplastic features, a rare event in pilocytic astrocytoma (PA), is not fully established. We reviewed 34 PA with anaplastic features (Male=21, Female=13; median age 35ly, 5 to 75) among approximately 2200 PA cases (1.7%). Tumors were included which demonstrated brisk mitotic activity [at least 4 mitoses/10 high power fields (400×)], in addition to hypercellularity and moderate-to-severe cytologic atypia, with or without necrosis. The tumors either had a PA precursor, coexistent (n=14) (41%) or documented by previous biopsy (n=10) (29%), or exhibited typical pilocytic features in an otherwise anaplastic astrocytoma (n=10) (29%). Clinical features of neurofibromatosis type-1 were present in 24% and a history of radiation for PA precursor in 12%. Histologically, the anaplastic component was classified as pilocytic like (41%), small cell (32%), epithelioid (15%), or fibrillary (12%). Median MIB1 labeling index was 24.7% in the anaplastic component and 2.6% in the precursor, although overlapping values were present. Strong p53 staining (3+) was limited to areas with anaplasia (19%), with overlapping values for 1 and 2+ in areas without anaplasia. Median overall and progression-free survivals after diagnosis for the entire study group were 24 and 14 months, respectively. Overall and progression-free survivals were shorter in the setting of prior radiation for a PA precursor (P=0.007, 0.028), increasing mitotic activity (P=0.03, 0.02), and presence of necrosis (P=0.02, 0.02), after adjusting for age and site. The biologic behavior of PAs with high-mitotic rates and those with necrosis paralleled that of St Anne-Mayo grades 2 and 3 diffuse astrocytomas, respectively. In summary, PA with anaplastic features exhibits a spectrum of morphologies and is associated with decreased survival when compared with typical PA.

Keywords
pilocytic astrocytoma, anaplasia, neurofibromatosis, prognosis, grading, glioma

- Login if you are a registered subscriber.
- Subscribe to this Journal , or
- Purchase access to this article if you are not a current subscriber.
- View this article in Ovid if your institution subscribes to this journal.

Note: If your society membership provides for full-access to this article, you may need to login on your society's web site first.

- Articles in Google Scholar by Fausto J. Rodriguez, MD
- Other articles in this journal by Fausto J. Rodriguez, MD