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Implications of hobnail features in anaplastic thyroid carcinoma and precursor lesions

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Anaplastic thyroid carcinoma (ATC) has the poorest prognosis of all thyroid cancers. Morphologically, it is characterized by pleomorphic undifferentiated cells. In some cases, a differentiated precursor lesion, either papillary thyroid carcinoma (PTC) or follicular thyroid carcinoma, can be identified adjacent to the anaplastic component. There are certain morphological variants of PTC that are known to be associated with more aggressive behavior, but a recently described, understudied variant is the hobnail variant. It is characterized histologically by micropapillary structures lined by cells with abundant eosinophilic cytoplasm and apically-placed bulging nuclei. The aim of this study was to evaluate the frequency of hobnail cells in ATC and associated precursor lesions. Microscopic slides from 21 cases of ATC diagnosed at Thomas Jefferson University Hospital between 2014 and 2017 were studied. 11 cases had an identifiable differentiated component, 8 of which were PTC. Hobnail cells were identified within the precursor PTC lesion in 5/8 of these cases. The high frequency of hobnail features in PTC precursor lesions associated with ATC suggests that hobnail features are an indicator of tumor aggressiveness. Further study is warranted to determine the prognostic value of hobnail cells in thyroid neoplasms.