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Immunohistochemical and molecular aspects of phyllodes tumors of the breast and the repercussions on diagnosis and treatment: a scope review

Luiz de Paula Silveira Neto[1], Luiz de Paula Silveira Júnior[2], Maria Luiza Bessa de Paula[3], Luiza Cesca Piva[1]

[1]Centro Universitário do Planalto Central Apparecido dos Santos, Universidade do Distrito Federal.
[2]Institute of Mastology and Oncology Ltd.
[3]Centro Universitário de Mineiros.

Objective: The objectives were to highlight the importance of immunohistochemical and molecular markers in the diagnosis, treatment, and prognosis of phyllodes tumors. A total of 424 publications were identified from the database search, and in the end, 39 studies were included in the synthesis. **Methodology:** The methodology of this study is a scoping bibliographic review, using the writers "phyllodes tumor" AND "immunohistochemistry" in the databases PubMed, SciELO, LILACS, Cochrane Library, NIH, Clinical Trials, NICE, and BVSMS. A total of 424 publications were identified from the database search, and in the end, 39 studies were included in the synthesis. **Results:** The results demonstrate that numerous immunohistochemical markers have been studied in an attempt to improve the accuracy in the diagnosis of benign, borderline, and malignant phyllodes tumors, such as p53, Ki67, CD117, EGFR, p16, VEGF, CD34, β-catenin, E-cadherin, B7H3, EZH2, ZEB1/ILK, c-Kit, BIK, p-BIK, CD44, and cancer stem cell markers. The higher expression of E-cadherin, β-catenin, and CD34 corroborates the diagnosis of benign phyllodes tumor, while borderline phyllodes tumor can express B7H3, CD34, c-Kit, and Ki67. An association of histological characteristics, high mitotic index, and expression of Ki67 and p53 in malignant phyllodes tumors was verified. High stromal expression of EZH2 in malignant phyllodes tumors has been reported in cases with lower disease-free survival and overall survival, and BIK and p-BIK proteins have very low expressions in these tumors. **Conclusion:** Extensive surgical removal is consolidated as the gold standard of treatment for phyllodes tumors. However, it is important to highlight that immunohistochemistry is a potential diagnostic tool in the evaluation of phyllodes tumors, along with histopathological characteristics, and in the near future, it may have repercussions and impact on the treatment and prognosis of these tumors.

Keywords: immunohistochemistry; phyllodes tumors; diagnosis; treatment.