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Research paper 9

Proliferative epithelial changes associated with the novel breast carcinogenesis molecular models: a Sri Lankan study on women with breast cancer

G.I.M. Jinadasa[1], H.D. Wijesinghe[2], M.M.A. Jayawickrama[1], M.D.S. Lokuhetty[2]

[1]*Department of Histopathology, National Hospital of Sri Lanka.*
[2]*Department of Pathology, Faculty of Medicine, University of Colombo, Sri Lanka.*

Background and objective: The novel multistep molecular model of breast carcinogenesis is based on the oestrogen receptor (ER) status of the tumour. Its two main arms comprise ER-positive and ER-negative breast carcinomas (BCa), associated with different pre-neoplastic/high-risk proliferative epithelial changes: columnar cell lesions (CCL), atypical ductal hyperplasia (ADH), lobular carcinoma in-situ (LCIS), low-grade ductal carcinoma in-situ (LG-DCIS) with ER-positive tumours and microglandular adenosis (MGA), pleomorphic LCIS (PLCIS), high-grade DCIS (HG-DCIS) with ER-negative tumours. This study aims to describe the association between proliferative epithelial changes in tissue adjacent to BCa in Sri Lankan women in relation to the ER status of the tumour.

Method: A descriptive cross-sectional study of 420 cases, including wide local excision and mastectomy specimens of BCa handled by the National Hospital of Sri Lanka, Colombo, between 2017–2019. The tissue adjacent to BCa (within 10 mm distance from tumour) was histologically assessed for proliferative epithelial changes. Tumour ER status assessed by immunohistochemistry was reviewed. The associations between proliferative epithelial changes and the ER status were analysed by univariate analysis.

Results: ER-positive BCa (n=322) showed significant associations with columnar cell hyperplasia (27.32% vs 17.34%, p=0.04), flat epithelial atypia (16.77% vs 8.16%, p=0.035) and LG-DCIS (41.30%vs11.22%, p<0.001). PLCIS, though more frequent in ER-positive tumours, did not attain statistical significance. ER-negative BCa (n=98) showed a significant association with HG-DCIS (43.87%vs30.74%, p=0.016). MGA was not detected.

Conclusion: Pre-neoplastic/high-risk epithelial changes evaluated in tissue adjacent to BCa in our local setting support the two recently described molecular models of BCa carcinogenesis. Identification of these proliferative epithelial components in a core biopsy that is negative for BCa should therefore prompt the pathologist to advise the clinician on close clinicoradiological correlation, and if necessary, to perform a repeat biopsy of suspicious lesions.

Corresponding author: Dr. Maheshika Jinadasa
Department of Pathology
National Hospital of Sri Lanka
maheshi.jinadasa@gmail.com