

# HER2 Low Breast Cancer <sup>†</sup>

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**Abstract:** Human epidermal growth factor receptor 2 (HER2) is a member of the epidermal growth factor receptor family that can be targeted by a monoclonal antibody. This has dramatically changed the management of breast cancer patients, as 15- 25% of them overexpress HER2. Thus, HER2 testing is a reflex step in diagnosing breast cancer, with a binary system of evaluation, positive or negative. The way to one of the two results goes through immunohistochemical studies with or without added tests like in situ hybridization. HER2-low breast cancer includes tumors with lower levels of the HER2 protein on their surface and IHC scores of 1+ and 2+ without amplification, but there is no actual definition, no special parameters that would define a tumor as low HER2, as low levels are not currently classified within ASCO 2018. Although immunohistochemistry is still the primary technique and the most common initial test in practice, it depends a lot on the pre and post-analytical conditions. The aim of our study was to evaluate the incidence of HER2-low breast cancers, their biology, and evolution in relation to neoadjuvant therapy. In our study, we included 110 breast cancer specimens for which initial biopsy and subsequent resection specimens were available. In all cases, HER2 2 immunohistochemical assessment was performed, and the results were either 1+ or 2+, and no positive result by in situ hybridization was obtained. The selected cases showed histological heterogeneity and were positive for hormone receptors in most cases. Most cases were moderately differentiated G2 invasive breast carcinoma NST, 74 cases had residual disease, and 36 showed complete response after therapy. We compared the HER 2 assessment with the results of the initial biopsies, and although the final result did not change, we found variability in the scores attributed. We believe new guidelines for -positive breast cancers are needed to properly detect patients that would benefit from a specific therapy.

**Keywords:** HER2-low; breast cancer.

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## **Conflicts of Interest**

The authors declare no conflict of interest.