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FISH testing of HER2 IHC 1+ early breast cancer with unfavorable prognostic factors.

Background HER2-positive tumors are associated with a poor prognosis and a shortened disease-free and overall survival as well as with other unfavorable prognostic tumor characteristics (high histological grade, high proliferative index, negative or low estrogen receptor expression, etc.). HER2-positive tumors are also responsive to treatment with trastuzumab in reducing the risk of recurrence and improving survival. The aim of this study is to assess the incidence of HER2 gene amplification in selected tumors with adverse prognostic features which scored 1+ by immunohistochemistry (IHC).
Methods 75 women with infiltrating ductal carcinoma (IDC) and infiltrating lobular carcinoma (ILC) scoring 1+ by IHC were included. Forty-eight invasive breast carcinoma samples were selected according to unfavorable prognostic tumor characteristics and tested by FISH. HER2 amplification was evaluated using Vysis HER2/Cep17 probe (Path Vysion HER2 DNA Probe Kit®, Abbott Molecular, IL); ratio–based amplification was considered present when the HER2/Cep17 ratio was 2 or more and copy number-based amplification was considered present when the mean HER2 copy number was more than 6, in agreement with the ASCO/CAP/SIAPEC guidelines.
Results In 2013, 331 patients with invasive breast tumors were tested by IHC; 75 cases (23%) were scored 1+ of which 62 cases (19%) of IDC and 13 cases (4%) of ILC. Forty-eight invasive breast carcinoma samples (64%) were selected according to one or more unfavorable prognostic tumor characteristics; 22 out of 48 tumors (46%) showed high histological grade (G3); 27 cases (56%) had high proliferative index (Ki-67≥30%); 32 tumor samples (67%) were node-positive; and 29 cases (60%) showed vascular invasion. FISH was performed on 31 of the 1+ patients with adverse tumor characteristics and 7 IDC out of 48 (14.6%) showed HER2 amplification.
Conclusions Our preliminary retrospective data suggest that 7 patients out of 48 (14.6%) scoring 1+ by IHC show HER2 amplification, in agreement with the most recently published literature data. In order to not deny the benefit deriving from trastuzumab administration, in breast cancer patients showing IHC 1+, it is advisable to test HER2 gene amplification by FISH.

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