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HER2 breast cancer group in Morocco: A pathological and statistical study

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Background: The molecular classification of breast cancer is based on four parameters: HER2, Ki-67, Estrogen Receptors (ER) and Progesterone Receptors (PR).

Methods: We retrospectively reviewed a series of 1351 cases of infiltrating breast carcinomas in female patients diagnosed in the Pathology Department of Ibn Rochd University Hospital, Casablanca, Morocco, from 1st January 2013 to 30 March 2017. These biomarquers status was assessed by immunohistochemistry and HER2 scores 2+ were subsequently assessed by *in situ* hybridization. We established a molecular classification of the carcinomas and we developed a correlation profile between HER2 status and various parameters. We carried out a bivariate analysis between HER2 overexpression and SBR grade as well, in order to evaluate the degree of correlation between SBR grade and HER2 overexpression.

Results: Based on this study performed on a Moroccan population, we showed that HER2 molecular subgroup represents 11% of the four molecular groups and is correlated to a higher SBR grade and lymph node invasion. Close examination of the HER2 receptor reveals that it is the most overexpressed of all (35%). The average age of patients who overexpress it is 47.36 years and women over 35 years of age are the most affected (89.86%). It is highly related to grade II (52.7%), then to grade III (44.59%), and to the presence of vascular emboli (56.75%). The bivariate study between the overexpression of HER2 and the severity of the SBR grade showed a very significant association. HER2 is correlated to SBR grade with a correlation coefficient of (Kendall tau=0.48). It is also highly and positively correlated with the Ki67 marker (Kendall tau=0.74). While overexpression of HER2 is negatively correlated with hormonal receptors (RE (Kendall tau=-0.16) and RP (Kendall tau=-0.04)).

Conclusion: As expected, we found that HER2-amplified breast tumors are characterized by an increased proliferation rates, high histologic and nuclear grades, low ER and PR levels and a strong correlation between the overexpression of HER2 and SBR grades II or III. This is, to our knowledge, the first statistical study of the kind in Morocco and North Africa.

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