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ARE BILATERAL BREAST CANCERS AND BREAST CANCERS COEXISTING WITH OVARIAN CANCER DIFFERENT FROM SOLITARY TUMORS? A PAIR-MATCHED IMMUNOHISTOCHEMICAL ANALYSIS AIMED AT INTRINSIC TUMOR PHENOTYPE

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Aim: Patients with bilateral breast cancer (BBC) and breast-ovarian cancer syndrome (BOCS) constitute populations potentially enriched for molecular defects involved in the pathomechanisms of these malignancies. We compared the morphological and immunohistochemical characteristics of primary tumors in BBC and BOCS patients with age-matched solitary breast cancers, with particular focus on intrinsic tumor phenotype.

Methods: Tumor morphology and expression of 8 immunohistochemical markers were assessed in tissue microarrays from 199 tumors from the multiple tumor group (BBC+BOCS) and 199 age-matched solitary tumors. Analyzed markers included estrogen and progesterone receptor, HER2, Ki67, cytokeratin 5/6, E-cadherin, vimentin and epidermal growth factor receptor.

Results: Compared to controls, BBC and BOCS considered jointly had lower incidence of DCIS (p=0.0003), lower expression of PgR (p=0.02) and HER2 (p=0.0004), and higher expression of Ki67 (p=0.007) and vimentin (p=0.036). BOCS tumors were of higher grade (p=0.004), had lower expression of ER (p=0.004) and PgR (p=0.03) and higher expression of Ki67 (p=0.005), CK5/6 (p=0.017), vimentin (p=0.01) and EGFR (p=0.009). BBC had less DCIS component (p=0.001), lower HER2 expression (p=0.002) and higher Ki67 expression (p=0.05). Metachronous BBC (mBBC) had lower expression of ER (p=0.036), PgR (p=0.006) and HER2 (p=0.00009), and higher expression of Ki67 (p=0.00099) and vimentin (p=0.01). Synchronous BBC (sBBC) had less DCIS component (p=0.004), higher expression of ER (p=0.005), and lower expression of CK5/6 (p=0.038), EGFR (p=0.016) and E-cadherin (p=0.03).

Conclusions: BBC are a heterogeneous group of tumors, different from solitary cases and differing between sBBC and mBBC. mBBC phenotype shares many features with BOCS tumors.

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