



Rare tumours of the breast

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Breast cancer is the most commonly occurring cancer in women. One in eight woman is diagnosed with breast cancer and over two million new cases have been registered in 2018 (1). About 90% of breast cancers are classified into classic type and certain therapies are very well described and straightened by randomised controlled trials (2). Namely, classic infiltrating ductal carcinoma (IDC) is the most common type of breast cancer, accounting for 80% of breast cancer diagnoses (2). Second in incidence is infiltrating lobular carcinoma (ILC) and accounts for 10% to 15% of breast cancers. Less than 10% of breast cancers are defined as “rare” and there is a paucity of literature on this topic. Neither randomised trials nor consensus on the optimal treatment of rare breast cancers is available. Data derive from case reports, national registries and few case series.

Rare tumours of the breast can be divided into epithelial and mesenchymal (3). Rare epithelial breast cancers are a heterogeneous group of malignancies with different behaviours and prognoses. Since the early 2000s, the discovery that breast cancers can be classified into specific molecular subtypes based on their global gene expression profiles has deeply shaped the current understanding of inter-tumor heterogeneity (4). Intrinsic classification of breast cancer into five subtypes, which influences the choice of adjuvant treatment, is defined based on genetic research of common ductal breast cancer, without the inclusion of rare histological types without knowledge of rare histological types, some prognostically favorable rare breast cancers may be erroneously classified among the group of prognostically unfavorable tumors due to their immunohistochemical characteristics, which may result in unnecessary aggressive adjuvant treatment (5,6).

Management of “rare” breast cancer is multidisciplinary; it includes locoregional (surgery and radiation therapy) and systemic therapy approaches.

Very little is known about specific conditions such as male breast cancer, breast cancer in pregnancy, inflammatory breast cancer or even about rare site of breast cancer metastases. The manuscripts included in this “Rare Tumours of the Breast” focussed issue of *Translational Cancer Research* evaluate the evidence for rare breast cancers, is aimed to clarify difficult aspects on the management of these disease and describe how to switch from bench to bedside through translational research to achieve the best treatment for patient diagnosed with a “rare” tumour of the breast.

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