Protein microarray-based comparison of HER2, estrogen receptor, and progesterone receptor status in core biopsies and surgical specimens from FFPE breast cancer tissues.

Currently, core biopsies are routinely used for diagnosis of breast cancer and they are often the only sample for providing prognostic and predictive markers before treatment. However, biopsies may not accurately reflect protein expression profiles from the whole tumor. In the last few years, reverse phase protein arrays (RPPA) have become a very promising tool for biomarker profiling allowing quick, precise, and simultaneous analysis of many components of a protein network. After extraction of full-length proteins from formalin-fixed and paraffin-embedded (FFPE) tissues, we compared human epidermal growth factor receptor 2 (HER2), estrogen receptor (ER?), and progesterone receptor (PGR) expression levels in a series of 35 FFPE breast cancer surgical specimens and their corresponding core biopsies using RPPA. We found a high concordance between protein expression in core biopsies and surgical specimens with concordance and \(\beta\)-values of 91.4% and \(\beta=0.677\) for HER2; 80% and \(\beta=0.587\) for ER?; and 82.8% and \(\beta=0.656\) for PGR. In this study, we could show that HER2, ER?, and PGR expression can be assessed reliably on core biopsies of FFPE breast cancer tissues using RPPA. These results might facilitate the implementation of RPPA technology in routine clinical settings.