Manually Created Tissue Microarrays for Immunohistochemical Detection of Her-2, ER, and PR in Carcinoma Breast

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Breast cancer is the most common cancer in women worldwide. HER-2 and ER/PR are the commonest molecular markers implicated in its prognosis and management. The new molecular classification of breast cancer is based on the expression of HER-2, estrogen receptor (ER), and progesterone receptor (PR). Tissue microarray is a technique by which many tissue cores can be simultaneously stained and studied in a single slide. The aim was to study and compare immunohistochemical expression of HER-2 and ER, PR in breast cancer on routine tissue sections and manually created tissue microarrays for validation of tissue microarray sections for regular use. Sixty histologically confirmed cases of breast cancer were studied. The tissues were routinely processed taking sections for hematoxylin-eosin staining and immunohistochemistry. Microarrays were manually created using bone marrow biopsy needles. A detailed database was made for each array constructed. Sections from the microarrays were taken for hematoxylin-eosin staining and immunohistochemistry. Immunohistochemistry was done using the streptavidin-biotin technique. The results on both routine and microarray sections were compared and agreement between the two methods was assessed by calculating the Cohen kappa coefficient. A substantial agreement was found between immunohistochemistry results on routine and tissue microarray sections for HER-2 and ER. For PR there was perfect agreement. The Cohen kappa value was 0.751 for HER-2, 0.800 for ER, and 0.833 for PR. It was concluded that manually created tissue microarrays could be used instead of routine whole sections for detection of HER-2 and ER and PR in breast cancer. The decreased time required and reagents saved would have a tremendous implication in the Indian context by reducing the overall cost of immunohistochemistry.