Breast Immunohistochemistry – [Tissue] Analysis

Objective

The objective of this test is to perform immunohistochemistry (IHC) on breast tissue samples. Breast IHC aids in the diagnosis, classification, and prognostic evaluation of breast cancers by detecting specific tumor markers such as estrogen receptor (ER), progesterone receptor (PR), and HER2/neu.

Materials and Methods

Materials:
- Breast tissue sample (biopsy or excision)
- Formalin for fixation and paraffin for embedding
- Microtome for sectioning tissue
- Primary antibodies (ER, PR, HER2/neu, Ki-67, etc.)
- Secondary antibodies and detection system (DAB chromogen)
- Light microscope

Methods:
1. Fixation and Embedding: Fix tissue in formalin and embed in paraffin.
2. Sectioning: Cut thin sections using a microtome and mount on slides.
3. Antigen Retrieval: Perform heat-induced epitope retrieval (HIER) or enzymatic digestion.
4. Staining: Apply primary antibodies, followed by secondary antibodies and chromogen detection.
5. Interpretation: Evaluate staining intensity and proportion of positive cells to determine marker expression.
6. Quality Control: Include known positive and negative control tissues for accuracy.

Results

- ER/PR Positive: Suggests hormone receptor–positive breast cancer; candidates for hormonal therapy
- HER2 Positive: Indicates HER2-targeted therapy eligibility
- Ki-67 Index: Assesses tumor proliferation rate
- Triple Negative: Lacks ER, PR, and HER2 expression; requires alternative therapeutic strategies

Conclusion

Breast immunohistochemistry is essential for accurate diagnosis, classification, and treatment planning in breast cancer. Marker expression guides therapeutic decisions and provides prognostic information when correlated with histopathological findings and clinical context.