



Assessing Techniques for Breast Cancer Occurrence and Treatment

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Description

Breast cancer remains one of the most prevalent and challenging health issues facing women worldwide. Understanding the techniques for both occurrence assessment and treatment is paramount in combating this disease effectively. It delves into the various techniques used to assess the occurrence of breast cancer, as well as the evolving landscape of treatment strategies aimed at improving patient outcomes. Mammography is the most common method for breast cancer screening, capable of detecting tumors at an early stage when they are most treatable. Digital mammography and advanced techniques like tomosynthesis have improved the sensitivity and accuracy of screening, enabling the detection of smaller lesions and reducing false positives.

Clinical Breast Examination (CBE) involves physical examination of the breasts by a healthcare provider to detect lumps, changes in size or shape, or other abnormalities. While less sensitive than mammography, CBE remains an important adjunct to screening, particularly in settings where mammography may not be readily available. Breast Self-Examination (BSE) involves women examining their own breasts for any changes or abnormalities. While controversial due to concerns about false reassurance and unnecessary biopsies, BSE can empower women to become familiar with their breast tissue and alert healthcare providers to concerning findings.

Genetic testing can identify inherited mutations in genes such as *BRCA1* and *BRCA2*, which significantly increase the risk of developing breast cancer. Genetic counseling and testing can help individuals understand their risk and make informed decisions about

preventive measures such as increased surveillance or risk-reducing surgeries. In addition to mammography, other imaging modalities such as Ultrasound, Magnetic Resonance Imaging (MRI), and Molecular Breast Imaging (MBI) may be used for breast cancer detection and staging, particularly in women with dense breast tissue or high-risk features.

Surgical options for breast cancer treatment include lumpectomy (breast-conserving surgery) and mastectomy (removal of the entire breast). Sentinel lymph node biopsy or axillary lymph node dissection may also be performed to assess lymph node involvement. Advances in surgical techniques, such as oncoplastic surgery and nipple-sparing mastectomy, aim to improve cosmetic outcomes while ensuring oncological safety. Radiation therapy may be used after lumpectomy to reduce the risk of local recurrence or after mastectomy in certain cases. Techniques such as Intensity-Modulated Radiation Therapy (IMRT) and Accelerated Partial Breast Irradiation (APBI) allow for precise delivery of radiation while minimizing exposure to surrounding healthy tissue.

Chemotherapy may be recommended for breast cancer patients based on tumor characteristics, stage, and other factors. Advances in chemotherapy regimens, including the use of targeted therapies such as HER2-targeted agents and Poly (ADP-ribose) Polymerase (PARP) inhibitors, have improved survival outcomes. Hormonal therapy, also known as endocrine therapy, is used to block the effects of estrogen and progesterone on hormone receptor-positive breast cancers.

Drugs such as tamoxifen, aromatase inhibitors, and Selective Estrogen Receptor Degraders (SERDs) are commonly used in the adjuvant or metastatic setting to reduce the risk of recurrence and improve survival. Targeted therapies specifically target molecular alterations driving tumor growth and progression. HER2-targeted agents such as trastuzumab and pertuzumab have transformed the treatment of HER2-positive breast cancer, leading to improved outcomes and prolonged survival for affected patients.

Conclusion

Assessing the occurrence of breast cancer through various screening and diagnostic techniques is vital for early detection and effective treatment. Additionally, the evolving landscape of treatment strategies, including surgery, radiation therapy, chemotherapy, hormonal therapy, and targeted therapy, provide hope for improved outcomes and better quality of life for breast cancer patients. Continued studies, technological advancements, and personalized approaches will further enhance the ability to combat this disease and ultimately reduce its burden on individuals and society as a whole.

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