Introduction to Breast Cancer

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34.1 Introduction

In the USA in 2012, 229,060 new cases of breast cancer (BC) and 39,920 deaths are estimated. These figures make BC the leading malignancy in females with a 29% share and second in morbidity with 14% behind only lung cancer. The picture is similar in most western and developed countries. Although the annual incidence of BC in the USA has a 2% decline between years 1999 and 2005, it is still increasing in developing countries. Encouraging though is the fact that since 1990, death rates are decreasing worldwide, reflecting on the progress made in early diagnosis and treatment. We live in an era where technological advancement in breast imaging and individualized treatments can and will take this achievement a step further.

Due to the elevated awareness of women in relation to BC and the resulting adoption of preventive strategies, we witness a decrease in the mean diameter of invasive cancers with less axillary involvement, more in situ carcinomas, and a steep increase in non-palpable image-detected lesions. This poses more problems as to the more accurate BI-RADS classification, noninvasive tissue sampling, and less invasive staging. In addition to that, the spectacular advances in molecular biology have enabled us to classify BC to molecular subtypes according to gene expression profiles, to develop marker targeted therapies and identify a population in genetic predisposition to cancer development. Combined with information from patient's family and past history, we can fairly accurately calculate her risk. In this setting, imaging oncology has a pivotal role to play in prevention protocols competing with chemoprevention and prophylactic surgery.

Critical to the employment of imaging modalities in breast oncology seems to be its rational and sensible use. Recently voices caution the overuse of high-cost imaging especially in stage IV patients [1]. This is attributed to many factors such as easy access to high-end technology, defensive practices, patients' demand, treatment predicament, etc. If this trend is continuous, it will not only cause unnecessary harassment and anxiety to seriously ill patients but will waste funds and effort much needed from other actions. To combat this, health-care providers must religiously adhere to evidence-based practice guidelines. In this context, new mammographic (Mm) techniques like photon counting, contrast-enhanced spectral mammography, positron emission, tomosynthesis, and others, such as breast-specific gamma imaging, enhanced MRI, etc., have to be very carefully evaluated for their added diagnostic value as compared to cost and availability.

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Reference

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