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SHORT COMMUNICATION

Breast Cancer Screening and Impalpable Breast Cancers – Our Experience

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Why breast cancer screening?

Worldwide over, one million women are diagnosed with breast cancer every year (10% of all new cancers). Regular mammographic screening has been proven to reduce mortality from the disease, and the reduction was 24% in eight randomizedcontrol trials (RCTs) in women over the age of 50 years invited for screening. Causes of breast cancer are not known so prevention is not an option currently.Itis proven in that one in 8 women will be affected by breast cancer in their lifetime. Breast cancer rates tend to be highest in Western Europe and North America, where lifetime risk of the disease is slightly higher than 10%. In some Africancountries, the lifetime risk is only 1%. In East Asian countries, risk has been low inthe past but is increasing now toward western rates. The other most important risk factor is age. The disease is almost unheard of in childhood and adolescence, andincidence gradually increases with age. Around the time of the menopause, there is a hiatus in the trend of increasing incidence, and in western populations incidence continues to increase thereafter at a slower rate. For some far eastern and other populations, incidence falls after the menopause. Early menarche, late menopause, late full term pregnancy,prolonged use of oral contraception, hormone replacement therapy are some of the known risk factors for development of breast cancer. Recently included risk factor is the BRCA positivity. BRCA 1 is localised on chromosome 17q21, BRCA 2 on 13q. If one is BRCA 1 positive there is a 50% to 73% chance of developing cancer by 50 years and87% chance by 70 years. BRCA 2positivity increases the risk by 45 % byage 70 years (breast cancinoma)

Table 1 shows the estimated relative risk of breast cancer of some of the known risk factors

Risk Factors	Estimated Relative Risk
Advanced age	>4
Family history	
Two or more relatives (mother, sister)	>5
One first-degree relative	>2
Family history of ovarian cancer in women <50y	>2
Personal history	
Personal history	3-4
Positive EIRCAVBRCA2 mutation	>4
Breast biopsy with atypical hyperplasia	4-5
Breast biopsy with LCIS or DCIS	8-10
Reproductive history	
Early age at menarche (<12 y)	2
Late age of menopause	1.5-2
Late age of first term pregnancy (>30 y)/nulliparity	2
Use of combined estrogen/progesterone HPT	1.5-2
Current 'Jr recent use of oral contraceptives	1.25

Breast cancer screening

Data from 2 county Swedish trial supports the contention that breast cancer is localised to the breast for a variable period of time before the development of systemic disease.

- Time to diagnosis is critical, earlier the better.
- Cancers less than 1 cm have a12 yr survival rate of 95%
- Node negative breast cancers less than 1.5 cm have a 12yr survival rate of 94%.
- RCTstarting at age 40 yrs have shown 20%-40% reduction in breast cancer mortality rates in screened groups compared to controls.

It is accepted that breast cancers grow more rapidly in pre-menopausal women so screening mammography every 2 yrs is recommended starting at age 40 yrs.

Accuracy of mammography is about 85% and is by far the best screening modality available.

Our experience

The KIMS-Ushalakshmi centre for breast disease was started in December 2007. The facility has a full-field digital mammography, the first of its kind in south India,a high end ultrasound and facility for counselling. We have performed about 11000 screening and symptomatic mammograms from December 2007 to December 2012, an average of about 2200 mammograms per year andabout 42 impalpable breast cancers have been diagnosed. All these screening patients underwent digital mammography in both MLO and CC views,magnification views were taken as needed. Later they were referred for an ultrasound and depending on the findings ultrasound guided core biopsies were performed (Figure 1). Finally histopathological findings were considered as confirmatory. If the findings were of microcalcifications alone, stereotactic core biopsy was performed for confirmation of diagnosis.Further, after the diagnosis of a malignancy the patients underwent image guided wire localisation and wide local excision. The reporting system followed was as follows-

Reporting

1 Normal
2 Benign
3 Indeterminate, probably benign
4 Probably malignant
5 Malignant

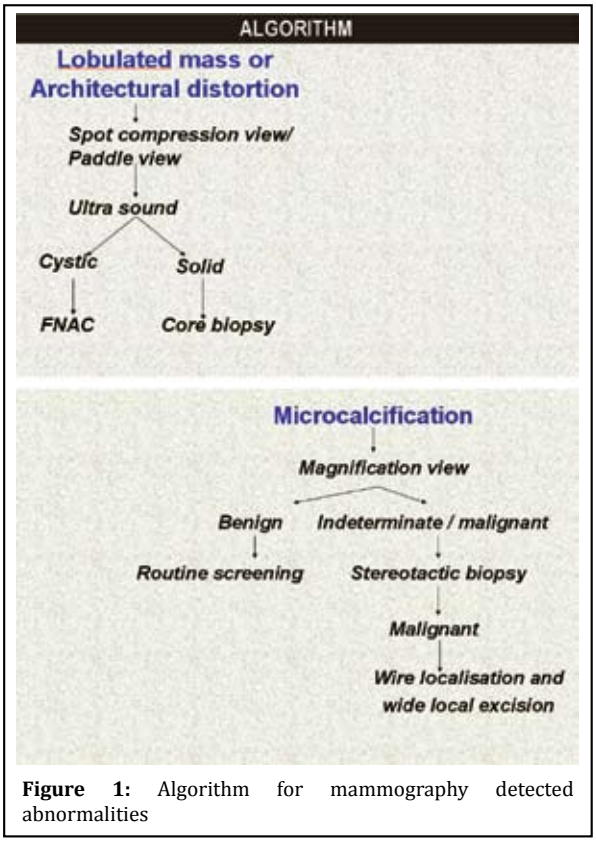


Figure 1: Algorithm for mammography detected abnormalities

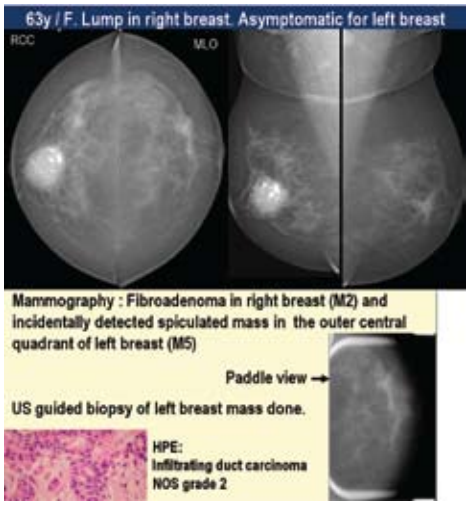
The sensitivity, specificity, and predictive values of mammography at our centre were as follows (Table 2), and have matched withseveral international studies

Table 2

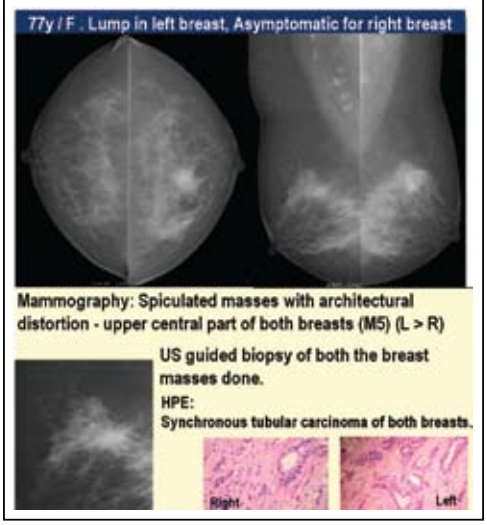
Sensitivity digital mammography	90.4 %
Specificity digital mammography	99 %
Predictive value of a positive test digital mammography	90.4 %
Predictive value of a negative test digital mammography	99 %
Percentage of false positive digital mammography	09.5 %
Percentage of truenegative digital mammography	0.09 %

Case illustrations

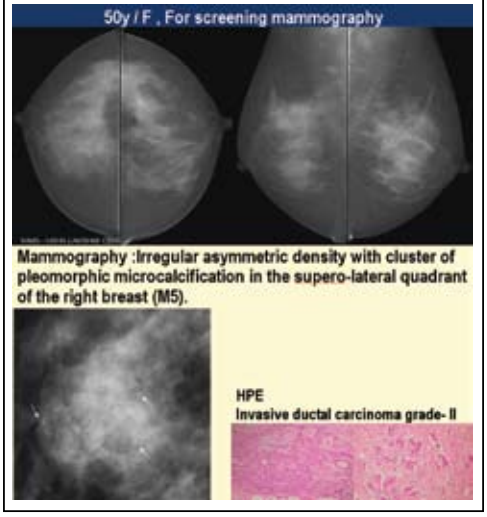
Case-1



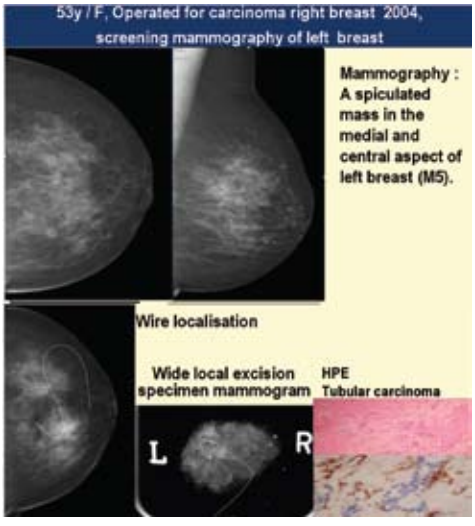
Case-2



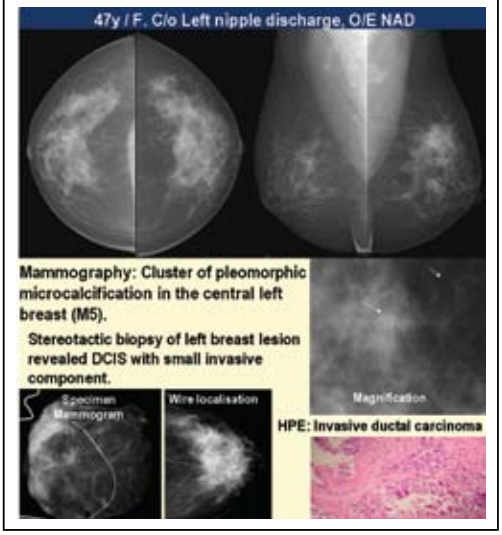
Case-3



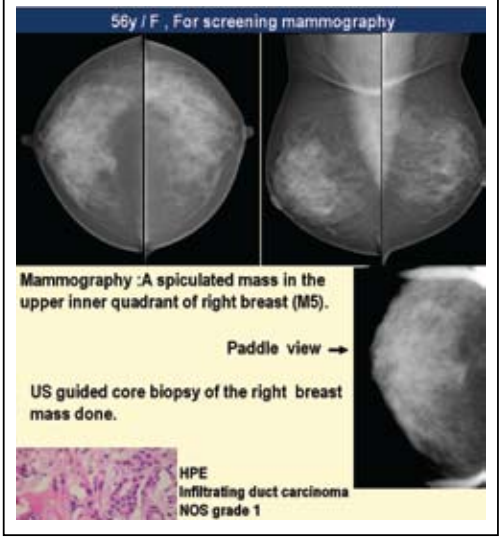
Case-4



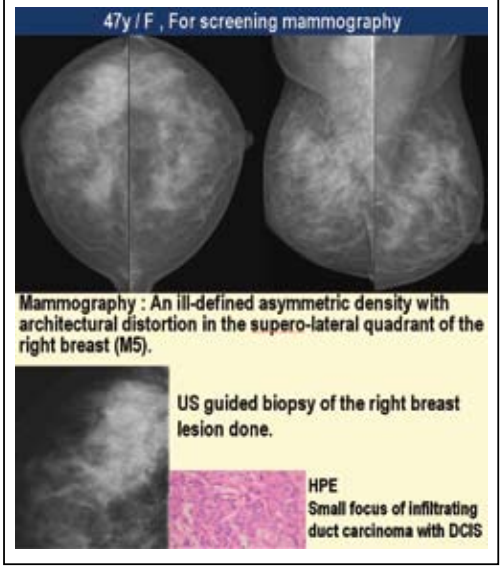
Case-5



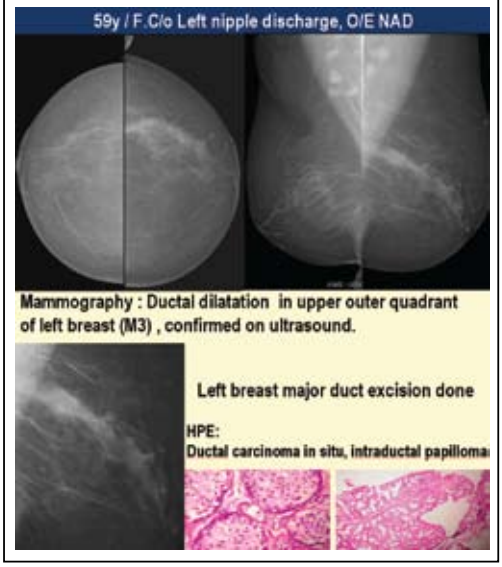
Case-6



Case-7



Case-8



Conclusions

Our understanding of the epidemiology of breast cancer together with our ability toinfluence the natural history of the disease both in individuals and in populations is almost unrecognisable compared with a few decades ago. Mammographyis a highly sensitive and specific tool for detection of early breast cancer and remains the gold standard for breast cancer screening. The improvements in imaging such as the digital mammography and image guided biopsy techniques have revolutionised cancer detection and cancer care. Screening and early detection, together with improved therapy have resulted in a striking improvement in survival.

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Mammography System