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Current Status of Breast Imaging in India

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Breast Cancer Incidence, Mortality And Trends in India

In India, breast cancer is the second most common cancer (after cervical cancer). Breast cancer accounts for 22.2% of all new cancer diagnoses and 17.2% of all cancer deaths among women in India (Agarwal and Ramakant 2008). The incidence of breast cancer ranges from 31 to 36.6 cases per 100,000 per year in metropolitan cities. In rural India, the incidence is much lower and ranges from 7 to 14.4 cases per 100,000 per year. There are estimated 144,937 new diagnoses and 70,218 breast cancer related deaths, every year (Ferlay et al. 2012). Based on the consolidated data of the peripheral cancer based registeries the estimated number of new breast cancers during 2007 in India was 82,000 (NCRP 2004- 5). It is alarming to note the rising trend of steadily increasing rates since the mid-1980's, with the largest increases observed in metropolitan cities. In fact, breast cancer has overtaken cervical cancer to become the leading site of cancer in most urban populations of India. Though the incidence of breast cancer in India is one-third that of Western countries, the mortality rates are disproportionately higher (Agarwal et al. 2009).

Epidemiology of Breast Cancer in India

Age incidence rates in India suggest that the disease peaks at a younger age (40-50 years) than in Western countries and as a result, the majority of new diagnoses occur in pre-menopausal women. The majority of new cases are locally advanced or at higher stage at the time of diagnosis (Chopra 2001).

The increasing burden of disease may be associated with lifestyle factors such as later age at marriage, age at first birth, reduced breastfeeding

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and westernisation of diet and physical activity patterns (Dhillon et al. 2011). Breast cancer rates tend to be higher in women of higher education and in specific communities that have adopted a more westernised lifestyle, such as the Christians and the Parsis, and is lowest in the Muslim communities (Yeole and Kirkure 2003).

Recent evidence suggests that breast cancer in Indian and Caucasian women may differ given the younger age at diagnosis, higher proportion of high-grade (45.7% for grades III & IV vs. 38.7%) and hormone receptor-negative tumors (30.6% ER-/PR- vs. 21.8%), higher incidence of inflammatory cancer (1.4% vs. 0.8%) and larger proportion with early-onset disease (16.2% <40 yrs vs. 6.23%) (Kakarala et al. 2010; Leong et al. 2010).

Economics of Breast Cancer in India

The WHO Global Burden of Disease showed that the number of disability-adjusted life years (DALY) attributable to breast cancer was 6,629,000 worldwide and 1,222,000 in South East Asia (Organisation WH 2008). Although there are no available data estimating the cost of the breast cancer burden in India, the DALY would be comparatively high considering the younger age and more advanced stage at diagnosis for Indian women compared to those in the West.

Breast Cancer Survival in India

Nearly all breast cancer cases are clinically detected in India, the majority presenting with locally advanced disease. Nearly one-third of breast cancer patients have skin/chest wall involvement at the time of diagnosis, and the stage at diagnosis is often worse in younger patients (Mathew et al. 2004). A later stage at diagnosis and lower survival have been linked to poor access to healthcare facilities and lower awareness, as well as demographic factors such as lower education and literacy (Ali et al. 2008; Somdatta and Baridalyne 2008). Even in states with higher literacy and awareness levels such as Kerala, only 15% of cancer patients seek medical assistance in a localised stage of disease (Jayalekshmi et al. 2006). Data on cancer survival is limited in India due to scarce resources and incomplete follow-up of cancer registry cases although a few cancer registries meet the minimum criteria acceptable for the Cancer Incidence in Five Continents (CI5) series (Parkin et al. 2005). A recent study based on these cancer registries (Bhopal, Mumbai, Barshi, Chennai and Karunagapally) found that the average 5-year age standardised survival for breast cancer in India was 52% (range, 31%-54%) (Sankaranarayanan et al. 2010). There are multiple factors that delay diagnosis in Indian women ranging from limited availability and access to health services, lower health literacy and social stigma attached to breast cancer.

Breast Cancer Screening in India

There is no organised population-based screening program for breast cancer in India. Mammography screening for early detection of breast cancer is a resource intensive proposition. It is not a viable option for most of the developing countries. Limited availability of mammography units and trained manpower, large population, inadequate financial allocations and other more pressing medical needs have so far precluded mammographic screening in India. Several small pilot projects are currently in progress to assess mammography screening in our population. BISI will observe and evaluate preliminary results of these studies so as to make recommendations on feasibility of mammography screening in India.

There is no scientific evidence for an overall mortality reduction for breast self-exams or clinical breast exams, but in developing countries such as India, the lower incidence rates, limited access to healthcare, fewer treatment facilities, and advanced stage distribution of disease may yield different optimal screening strategies, such as clinical breast examination (CBE) and ultrasound.



Image.

BISICON 2013, First Annual Conference of the Breast Imaging Society (India). Hands on work-shops on mammography, ultrasound, MRI, & intervention techniques using phantoms & simulations were the highlight of the conference.

Diagnostic Breast Imaging

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Non-availability of mammographic screening does not undermine the importance and need of quality breast imaging in less resourceful countries. Reducing breast cancer mortality using screening may not be an immediate goal in India at present. Downstaging the disease at presentation by promoting increased public awareness, quality breast imaging and delivery of optimal treatment is the primary objective. Diagnostic breast imaging to evaluate diseases of the breast in women presenting with breast related symptoms such as lump, mastalgia and nipple discharge is the major area of breast imaging in non-screening setup. It is also required preoperatively in women already diagnosed with breast cancer to define extent of the index tumor and detect additional masses, as this may have implications in management decisions. Women already treated for breast cancer need regular surveillance with breast imaging to detect recurrences or metachronous breast cancers.

Challenges in Breast Imaging in India

Major challenges in our country include limited availability of mammography and well experienced radiologists. Symptomatic women may present to surgeons, oncologists, gynaecologists, internists or family physicians and there may be variable trends in referral for breast imaging. Utilisation of breast imaging in such a setup is also governed by beliefs of the clinician and quality of breast imaging services available to them. In this situation, breast imaging does not form a major part of radiology practice and hence, there are not many full time dedicated breast radiologists. In most situations, a general radiologist with little time and experience in breast imaging has the responsibility to cater to these patients. There are also wide variations in type and quality of mammography units. Screen-film, CR based and at major centres in most parts of India, Full Field Digital mammography (FFDM) systems are available. However, lack of mandatory Quality Assurance (QA) requirement leads to non-uniform (mostly poor) quality and this conversely affects the output and contribution of breast imaging in diagnostic setting. A systematic approach is the key to standardise and evolve diagnostic breast imaging.

Breast Imaging Society (India)

In India, there are several radiologists who have always had special interest in breast imaging and have been practising this speciality for long. However, there was no appropriate and dedicated platform for professional interaction. Many senior breast radiologists of India dreamed and worked hard to form a pan-Indian breast imaging society. Their vision and hard work finally culminated into formation and registration of Breast Imaging Society (India) or BISI. Main objectives of the society include promotion of world class breast imaging practice and emphasising its role in healthcare. These will be achieved with regular conferences, CMEs, workshops, fellowships and training programs. BISI will promote high quality, well designed clinical research to test and validate country-specific breast imaging protocols. Recommendations and guidelines specific to the needs of our country will be formulated. BISI will also interact with organisations of breast surgeons, oncologists, NGOs, industry, policy makers and others who are directly or indirectly involved in breast cancer awareness and management.

Progress So Far

Since its inception in August 2013, BISI has witnessed a very enthusiastic response with a fast growing membership. Currently there are 121 registered life members of the society, radiologists who have been practising or have an interest in breast imaging. The society has conducted several training programs for them which included not only didactic lectures, but also hands-on practical workshops covering mammography interpretation, image guided breast interventions and MRI training courses. The first annual conference of the society 'BISICON 2013', held in November 2013 was attended by 220 delegates (see image). The scientific programme featured lectures, case discussions with electronic voting, and hands-on, practical workshops on image-guided biopsies (stereotactic, ultrasound, MRI).

BISI is in the process of starting a oneyear dedicated breast imaging fellowship in BISI accredited centers across the country with a standardised curriculum and examination process. During this structured training programme, the trainee will familiarise his/herself with all aspects of breast imaging and intervention by case-by-case hands-on teaching on routine clinical cases.

A task group consisting of eminent experts has been created to help formulate India-specific guidelines for appropriate conduct of mammography, breast ultrasound, MRI and breast interventions. These guidelines would cover the basic requirements in equipment, indications, technique and reporting so as to promote standardised, quality breast imaging care across the country.

BISI is also formulating a proposal to our health ministry to promulgate laws to ensure mandatory accreditation and quality assurance of all the mammography centers in the country. National Accreditation Program for Breast Imaging Centers would then require the breast center to satisfy a set of quality standards for all aspects of breast imaging and interventional procedures.

BISI has identified 5 regional breast imaging centres in the country which can adopt a leading role in the development of state-of art breast centers in their respective areas. This would promote better coverage of our large population with uniformly high quality breast imaging services.

Breast imaging in India stands where developed countries were, probably 30 years back. We hope, it will not take us 30 years to reach where the developed world is today. In this endeavour, BISI seeks affiliation with the established major societies in the world like the SBI and EUSOBI, so that with their guidance and collaboration we can progress at a much faster pace.

Conclusion

Quality breast imaging has been recognised as a critical component of multidisciplinary breast cancer care, the world over. Up-to-date technology and adherence to scientific guidelines are the key factors for improvement in breast imaging and developing countries rely on the

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developed countries for this. However, it is important that western models are not blindly replicated in developing countries as they have different background, clinical needs and resources.

Main challenges for breast imaging in India include a large number of women presenting with advanced breast cancers, inadequate breast imaging facilities and its variable quality. Breast imaging is still not practised as an independent subspecialty or as an important component of the radiology practice and hence, there is scarcity of trained breast radiologists.

BISI has identified the key areas to work upon. Some of these include better co-ordination and exchange of knowledge among professionals; promotion of quality control of equipments and clinical practice, regular training of radiologists and technologists, improvement in public awareness, interaction with health professionals, community workers and policy makers to develop guidelines which should lead to optimal utilisation of limited resources. So far, the response to BISI activities in first year of its existence is encouraging.

India Statistics (2012)

Total population:	1,240,000,000
Gross national income per capita (PPP International \$)	3,910
Life expectancy at birth m/f (years)	64/68
Probability of dying under five (per 1000 live births)	56
Probability of dying between 15 and 60 years m/f (per 1000 population)	242/160
Total expenditure on health per capita (Intl. \$ 2012)	157
Total expenditure on health as % of GDP	4.1
Number of hospital beds (per 1000 population)	0.7
Number of doctors (per 1000 population)	0.7

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