BREAST IMAGING SOCIETY, INDIA

BEST PRACTICE GUIDELINES – MAMMOGRAPHY

INTRODUCTION

Mammography has stood the test of time and is considered the best screening tool for breast cancer. It is the first line of investigation for most breast symptoms. As an investigative tool it helps characterise breast lesions and thus plays a significant role in reducing mortality and morbidity from breast cancer. Along with ultrasound it continues to be the basic investigative tool for breast diseases. Even when breast screening MRI study is performed, it is imperative that a correlating mammogram is available. As a breast radiologist, it is therefore most important to master the art and technique of performing and reporting mammography. In this document indications and technique of mammography have been discussed. Available international data as well as indian scenario and need have been taken into consideration and Breast Screening guidelines from the Breast Imaging Society, India (BISI) have been recommended in this document.

TECHNIQUE

Establishing a rapport with the client and explaining the procedure helps alleviate client's anxiety. This goes a long way in acquiring images that are optimal and useful.

Mammography should include mediolateral oblique (MLO) and craniocaudal (CC) views of each breast. These are regarded as the standard views. Even when symptoms are unilateral, bilateral mammograms are advised to assess asymmetric abnormalities. Digital mammography is preferred to film screen mammography, particularly for women aged < 50 years and for those with dense breast tissue [1]. If a suspicious abnormality is demonstrated on mammography, it is helpful to further characterise the mammographic features using magnification or spot compression views. Other views such as the laterally and medially extended CC views, and the valley view help visualise areas of the breast that are difficult to visualise on the standard views. Lateral view helps confirm if a lesion seen on the MLO view is truly in the upper or lower half of the breast.

Adequate Quality Assurance of the Mammography Unit is mandatory. The technique of acquisition of mammographic images must be monitored with specific attention to radiation dose and technical adequacy of films. The dose of radiation must be minimised based on the As Low As Reasonably Achievable (ALARA) principle. Most mammography units have an automated exposure control (AEC) system, which helps minimising radiation for the given

breast thickness and composition. Exposure time must be as low as possible, to reduce dose, to avoid motion artefact and to minimise discomfort to the lady being imaged. Optimal compression must be applied.

INDICATION

Broadly the indications for Mammography fall into two categories : Screening and Diagnostic.

Screening Mammograms: These are for ladies who have no breast symptoms and no clinical signs of breast cancer. The purpose is early detection of breast cancer, when it is small and impalpable. This is to aid reduction of patient morbidity and mortality.

Diagnostic Mammograms: These are for ladies who have a symptom such as a palpable lump or blood stained nipple discharge, etc. The mammograms are acquired to identify the cause of the symptom, more specifically to diagnose if the symptoms are caused by a malignant mass.

Screening Mammograms

The population based cancer registries of India have shown significant increase in number of breast cancer diagnosed over the years in India [2]. It has been felt by different groups that breast self-examination and clinical examination are perhaps the right tools for early detection of breast cancer for the huge population of India, but no credible data is available today to prove that these are the best screening methods. Mammography has established itself as the investigation of choice for breast screening.

Breast screening related information, both potential benefits and possible risks, must be given to the lady and mammography must be performed after the lady gives an informed consent.

There are many screening guidelines from countries that have a population based breast screening programme. These programmes vary from country to country and hence there are different guidelines from different Breast Societies in the world. Due to lack of data specific to our country, currently no specific guidelines are available in India. However a few concepts and facts are recognised all over the world and these can be applied to the indian population in general. There are other facts that are specific to our country, such as increasing incidence of breast cancer in younger women, and the practice in India needs to be planned keeping these in mind. Some examples of Breast Screening Programme/ guidelines are The National Health Service Breast Screening Programme (UK) [3] and American College of Radiology Guidelines [4].

For women at average risk of breast cancer, screening mammography is thought to be beneficial between the ages of 50 and 74 years.[5] Although mortality reduction is less than that seen when screening older women, randomised control trials have shown a significant reduction in mortality in the 40–49 years age group. [6] Mammography screenings are effective and generate a 17% reduction in breast cancer mortality in women 39-49 years of age [7]. Breast cancer incidence increases with age. As a result more women in the 40-50 years age group would need to be screened to save the same number of lives as would be saved by screening women ≥50 years of age. But due to the longer life expectancy in younger women, life years gained for the women diagnosed with breast cancer by screening in their 40s is higher than in the ≥ 50 years old age group. [8]. It is known that screening women aged 40 - 49 years requires more frequent mammography and is less specific than screening in older women. Screening women 40 – 49 years of age does not however increase overdiagnosis compared with women starting screening at 50 years of age.[6] There is no evidence to support screening of women women <40 years old who are at average risk from breast cancer. [5, 6]. No upper age limit is established for screening mammography. However as the benefits of breast screening may take years to be fully realized, life expectancy and comorbid conditions should be taken into consideration to decide the upper age limit. In general screening mammography can be considered appropriate when a woman's life expectancy exceeds 5 to 7 years. [8]

Patients presenting with breast cancer are about one decade younger in developing countries in comparison to women in developed countries.[9] The proportions of young patients (< 35 years) of breast cancer vary from about 10% in developed nations to up to 25% in developing asian countries.[9] In the developing countries locally advanced cancers constitute over 50% of all patients managed indicating that diagnosis happens at a relatively late stage due to multiple causes.[9] The life expectancy at birth in 2013-17 has been 70.4 years for the female population in India. [10]

BREAST SCREENING RECOMMENDATION FROM BREAST IMAGING SOCIETY, INDIA

Taking all of the above data into consideration, 40 years is recommended as the age for starting mammography based screening in India. Although no dedicated population based screening programme exists in India, opportunistic screening of interested women, on a yearly basis, from the age of 40 years, is deemed appropriate. Annual mammography is advised till the age of 70 years. Beyond the age of 70 years, it is advised that a decision is made based on lady's comorbidities and life expectancy.

Screening (Surveillance) of contralateral breast to look for metachronous breast cancer after unilateral mastectomy for breast cancer is to be performed under the age of 40 years, if cancer was detected at < 40 years of age. Ultrasound and MRI may be required as adjuncts as younger women may have relatively dense breasts.

High Risk Group Screening (mammograms along with Breast MRI) is appropriate if there is a lifetime risk of breast cancer of ≥ 20% according to risk assessment tools that are mainly based on family history, if lady has a known BRCA1 or BRCA2 gene mutation or has a first degree relative with BRCA1 or BRCA2 gene mutation (and has not had genetic testing herself), if lady has a first degree relative with pre-menopausal breast cancer, if she has had radiation therapy to the chest when she was between the ages of 10 years and 30 years [4]. Screening with annual mammography (and annual MRI) is recommended to begin at age 30 years or 10 years before the age of diagnosis of first-degree relative with breast cancer, whichever is later. With history of mantle radiotherapy, annual mammogram (and annual MRI) should be started 8 years after radiation therapy. However screening mammography is not to be started for any lady before the age of 25 years, irrespective of the cause of high risk. Mammography and MRI are complementary examinations, and both should be performed. [4 & 8]

Diagnostic Mammograms

In the presence of breast symptoms such as a palpable lump, blood stained or serous nipple discharge, breast pain that requires investigation, mammography is used in the investigation of women aged 30 years or more. Addition of ultrasound is useful as these two modalities complement each other. In the 30 – 39 years age group clinical correlation is advised before requesting / performing a mammogram. For example a 32 years old lady with a clinically palpable small mobile mass with ultrasound features of a typical fibroadenoma may not require a mammogram for further characterisation of the lump. Mammography should not be used for opportunistic screening in the 30 – 39 years age group for women with average risk of breast cancer.

Mammography is not indicated as the first investigation for the majority of patients aged < 30 years. Ultrasound is the imaging method of choice for the majority of women aged < 30 years and during pregnancy and lactation. However mammography should be carried out in all patients with proven malignancy. Similarly mammography should be performed if there is a worrying appearance on ultrasound or clinical examination even in the < 30 years age group.

Breast pain that needs investigation such as focal persistent noncyclical pain, is often a nonspecific breast symptom. In symptomatic women less than 30 years of age, ultrasound is more accurate in making a diagnosis than mammography [11], and hence ultrasound is recommended as the first investigation. In the 30 – 39 years age group, adding mammography is advised.[11] Mammography may also be indicated in patients under the age of 30 if a suspicious lesion is found on the initial ultrasound examination, or if clinical signs justify the radiation exposure. Above the age of 40 years, mammography is recommended as the first investigation. Ultrasound is also useful in this age group as an adjunct to identify the cause of pain, especially in dense breasts.

In women presenting with a lump, diagnostic mammography is recommended if age of the lady is 30 years or more. In the 30 – 39 years age group clinical correlation is advised before requesting / performing a mammogram. Ultrasonography is more sensitive than mammography in detecting lesions in women with dense breasts, and it is the preferred imaging modality in women younger than 30 years with a palpable breast mass [12]. If ultrasound identifies a suspicious lesion, mammography is advised for the under 30 years age group also.

There are other guidelines which advise a cut off age of 40 years or 35 years for performing mammography in ladies presenting with breast symptoms [13]. Given the early onset of breast cancer in India, and given that the indian data we have is mostly from symptomatic women (rather than cancer picked up at breast screening), a lower cut off age of 30 years has been deemed appropriate for women with symptoms in our country.

Please read the guidelines on "Common Breast Symptoms: Algorithm for Imaging Evaluation", which is part of the Best Practice Guidelines of Breast Imaging Society, India for further information on the appropriate tests for patients presenting with breast symptoms.

REPORTING MAMMOGRAMS

Low ambient light is advisable in the reporting area and ambient lighting must not exceed 20 lux.[14] High quality 5 megapixel monitors are advised at the reporting work station.

The report should contain a comment on composition of fibroglandular tissue in the breast or breast density. Clear description of the mass, calcification, architectural distortion or focal asymmetry must be made, and where required advise such as further investigations or a follow up plan must be given. There are international guidelines that one may want to follow. Following a reporting system such as the ACR BI-RADS system is advisable.[15] Most importantly the report must communicate the salient findings to the referring doctor in a clear and unambiguous way.

Quality assurance aspects of reporting station are explained in detail in the Quality Assurance Guidelines.[16]

DISCLAIMER

The Best Practice Guidelines of Breast Imaging Society, India are the broad guidelines for investigation, intervention and management of clients opting for breast screening and patients with breast symptoms in India, and intended for the use of qualified medical caregivers only. These are based on various national and international guidelines and personal experiences and opinions of BISI members, as there is no large credible Indian data to formulate these guidelines. These guidelines are purely recommendatory and general purpose only in nature. Actual decisions for management of patients should be individualized according to own judgement of the caregiver and tailored on case-to-case basis. As scientific knowledge is continuously improving, a regular update of the same by the caregiver is essential. Failure to do so may result in untoward patient management or outcome and BISI members or BISI as the organization cannot be held responsible for that in any manner.

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