EDITORIAL

Breast cancer screening, growing awareness and newer promising techniques- Conventional mammography, Tomosynthesis and ultrasound

Breast cancer is the most common type of cancer in the women population worldwide and its number is continuously increasing.[1] One of the reasons among this development is aging of world population. It is well known fact that probability of developing of breast cancer increases with age. This along with rising standards of living especially western life styles, more education of women population, resulting in later births, shorter lactation periods indirectly lead to higher risk of breast cancer due to changing hormonal influences.[2] This again eagerly needs early detection options.

Breast cancer screening by two view digital mammography is currently a global standard of preventive medicine.[3] Screening mammography was introduced in early 1970s &there is strong evidence that a significant number of deaths from breast cancer can be prevented by regular mammograms & hence timely treatment. Mass screening program is currently practiced in more than two dozen countries.

In spite of obvious benefits of routine mammography, some people argue that the original large preventive effect of the screening has reduced in last few decades. It is due to the fact that many types of breast cancers can now be treated more effectively today and very early diagnosis is no longer as important as it used to be.[4] Others say that population wise screening approach creates specific problems. For example, most women who take advantage of screening do not develop breast cancer in their life time, rather some may find themselves confronted with an inconclusive or suspicious finding in initial screening mammogram that leads to so called recalls and sometime over diagnosis/ false positive diagnosis and treatment that in retrospect may have been unnecessary. It is also well known that routine 2D conventional mammograms do not detect all breast cancers; in fact up to one third of all cancers may remain undetected, especially in women with very dense breast tissue.[5] Among others, one reason for this is that overlapping dense breast tissue can cover small tumor and thus prevent from being seen in conventional mammograms.

To overcome these difficulties several advances are in queue that will change the practice of breast screening in future internationally. Among them is a relatively new emerging technique of 3D depiction of breast in mammography that could replace convention 2D mammogram. This is Tomosynthesis. With this new promising technique, the x-ray tube moves in an arc over the breast, taking low dose images across wide range of angles. This imaging data is then processed by computer just like CT scan to depict one millimeter thin slices of entire breast. These are then displayed as a stack that the radiologist can scan like a flip book.[6,7,9] A study done in Oslo Norway concludes that "the use of mammography plus tomosynthesis in a screening environment resulted in a significantly higher cancer detection rate and enabled the detection of more invasive cancer."[8] It also reduces the radiation exposure. Furthermore the force needed to compress the breast could also be significantly reduced, proving it to be more patient friendly procedure.

Ultrasound is another good alternate in cases of dense breast tissue. This is also important in developing countries like Pakistan, where breast cancer often develop at an earlier age.The modality is cheap, no radiation exposure, easily available but operator dependent.[10,11]

In Scandinavian countries, UK & Germany women receive a personnel invitation for screening at pre-determined intervals. In countries like ours the situation is not ideal. Here the

participants are recruited through media campaigns or referred by the doctor or women undergo examination by their own request. In Pakistan, in addition to enhancing screening methods, it is more important to provide access to screening programs. In addition there is need for steps for increased awareness among population and medical community and necessary training of staff, wide spread availability of screening equipment, quality assurance of imaginkg, image interpretation, and further work up if needed.[12]

Furthermore as breast cancer in very common in Pakistan therfore we need accurate breast training program in Pakistan so that we can detect breast cancer early and timely intervention by surgeon will prevent the disastrous effects of breast cancer. We recommened that all the women of reproductive age should have breast self examination, ultrasound of the breast and mamography in all towns and cities in Pakistan and all female with suspicious finding should be reassessed in breast clinics by surgeons and should undergo FNAC if required and should introduce 3-D dipiction of breast memography in Paksitan. This tomosynthesis will help in dedecting very small tumor by depicting 1mm slices of mamography like CT scan.

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