Breast cancer: Indian experience, data, and evidence

Breast cancer is now the most common cancer in Indian women, having recently overtaken cervical cancer in this respect. It is therefore in fitness of things that Rangarajan et al. have attempted a compilation of Indian data in this disease in the current issue of SAJC. Although they have done an admirable job of systematically collating and reviewing data, the relative lack of high-quality actionable evidence generated in this country, with few honorable exceptions, is strikingly apparent. Therefore, the piece by Rangarajan et al. is also a call to action to undertake and report studies that are relevant to breast cancer as seen in this country. I will attempt to outline a broad agenda for action from the short- and mid-term perspectives. The domains that need attention include primary prevention, secondary prevention (early detection), diagnostic modalities including pathology, treatment, palliative care, and translational research including biomarkers.

It is well known that India has a much lower incidence of breast cancer than Western countries, even after adjusting for age structure of the population - about one-third in urban areas and one-ninth in rural regions.[2] The lack of population screening in India (and corresponding overdiagnosis in Western populations) undoubtedly contributes to this statistic but more importantly, so do lifestyle, reproductive and dietary factors. There need to be systematic efforts at researching, preserving, and promoting those factors that “protect” Indian women from breast cancer. Three ongoing or reported studies are noteworthy in this regard. The first is a case–control study that attempts to look at the differential risk factors for triple-negative breast cancer (TNBC) compared to estrogen receptor-positive disease (Nag et al., personal communication) given that former is much more common in India.[3] The second is another case–control study that has looked at various aspects, including weight and body size (waist-hip ratio, others) as risk factors in Indian women.[4] The third is a cohort that has been established in a rural region of Maharashtra that will look at conventional as well as germline risk factors in a longitudinal manner (Dikshit, personal communication).

With respect to screening, we are awaiting the results of a large cluster randomized controlled trial being conducted by the Tata Memorial Centre (TMC), which randomizes women to receive health education versus health education plus four rounds of screening using clinical breast examination performed by trained health workers.[5] The screening rounds are over and this trial’s report is likely to settle the long-standing question of whether clinical breast examination is a useful screening strategy.

There have been some studies in pathology of breast cancer, reported from India. However, most have been descriptive reports about the types of carcinoma and more recently, receptor expression pattern. What is required are more reports dissecting the molecular heterogeneity in Indian women and any unique aberrations at the genetic, epigenetic, or proteomics levels that may be gainfully targeted. The number of potentially practice-changing therapeutic breast cancer studies reported from India is limited.[6–8] A recent report of a randomized controlled trial of performing surgery of primary tumor (vs. not) in patients with metastatic breast cancer has settled this long-standing question. Some other ongoing randomized trials in TMC will answer important questions about the utility of platinum in TNBC, yoga as an adjunct treatment in postsurgical patients, etc. It should be noted that Indian studies need to ask and answer questions that are locally relevant. In this context, a recent audit, as yet reported only in abstract form, has shown very gratifying mid-term survival results with a modified short-course trastuzumab regimen in the neoadjuvant and adjuvant settings.[9] A very recent report of the prevalence of germline mutations in Indian breast cancer patients is a welcome step toward refining the care of these patients.[10]

In the future, a greater focus would be welcome on defining disparities in accessibility,[3] cost effectiveness of therapeutic options, transition to palliative care, drug resistance, and comparative effectiveness analyses. Of particular, note the focus should be biological, translational, and therapeutic studies in young and very young women with breast cancer who constitute a higher fraction of Indian cohorts.[3] It is hoped that the next version of this editorial will be spoil for choice in including Indian high-quality breast cancer studies to quote.

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The incidence of breast cancer has been steadily increasing in the last two decades, more so in urban areas of the subcontinent. Cancer centers across the country have large numbers of patients being treated with multiple publications in this field. Inspite of paucity of prospective data and randomised clinical trials from India, there are large number of retrospective publications on various aspects of the disease including pathology, radiology, surgery, chemotherapy, radiation, palliative care and alternative treatment modalities. These published data provide an insight into the trends of breast cancer in the country and will provide a basis for designing trials relevant to our population and planning health care.

For decades together, cervical cancer was the most common cancer in women in India, and more deaths in women in India were attributed to cervical cancer than any other cancer. However, over the last 10 years or so, breast cancer has been rising steadily, and for the first time in 2012, breast cancer was the most common cancer in women in India, a way ahead of cervical cancer. However, this is partly due to an actual decrease in the incidence in lower socioeconomic status and Grade III cancers. Grade III cancers, in private hospitals, are more common in the younger age group in India and 52% of new cases of breast cancer and about 76,000 women in India are between 40 and 49 years of age. A significant rural/urban division in the breast cancer incidence is also seen, with a higher incidence of breast cancer in urban areas than rural areas. 

Regarding the incidence of breast cancer, there are large numbers of reports from women in metropolitan areas of India (Mumbai, Pune, Delhi, Bangalore, and Chennai). However, there are not many reports from the interior areas. Hence a population-based registry is crucial to understand the breast cancer incidence and prevalence in the country. The population-based registries show a significant rural/urban division in the breast cancer incidence. The difference in lifestyle and economic drives sampling and hence, adequate representation across varying populations in our country with lower economics drives sampling and hence, adequate representation.

Protocols for tumor sampling are often incomplete as emboli are lacking in many specimens. Some differences are observed in the histopathology of breast tumors comparing the Indian cases with the Western literature. These differences are not well documented in the existing literature and hence, a comprehensive data review is required to understand the nature of breast tumors seen in India. A pathologist compares a tumor with available data. This is the first part of the tumor diagnosis. The second part of the tumor diagnosis is the molecular diagnosis which is the molecular profile of the tumor, which we are not able to do. There are few reports which have been published from Indian institutes which show the molecular profile. This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

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