Breast Cancer: Determination, Investigation and Control

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Breast cancer research is going on at an unprecedented pace. A number of studies have been done throughout the world regarding breast cancer statistics[1,2] Now it is a well-established fact that cancer of the breast is the most common malignant tumour and is a leading cause of death in females[3]. Its incidence is high in North America and Northern Europe, intermediate in Southern Europe and Latin America and low in most Asian and African countries[4].

In Pakistan the epidemiology of breast cancer is not precisely explainable because of the lack of tumour registry system. However efforts have been made to explore the magnitude of the problem at a single or multi institutional basis. These studes[5,6] have been done in different hospital settings of Northern and Southern Pakistan. This data is limited in information on the basis of geographical and time constraints. Nevertheless some information is available regarding the status of breast cancer statistics in our country. By utilizing, this information it is possible to investigate the natural history and to search for the environmental or genetic factors in the development of breast cancer.

By comparing the results of studies done in Pakistan with those of the western world[6,7] differences have been found in the age of the patient, size of tumour. grading of tumours and lymph node status. The mean age with breast cancer is lower in studies from Pakistan as compared to the United States, which is probably due to the fact that overall, the Pakistani population is younger and their life expectancy is less than that of the United States[7].

The epidemiological data has shown several risk factors associated with breast cancer [1]. Indicators of endogenous hormonal alterations are among them: early age at menarche and late age at menopause, nulliparitv, late age at first full term pregnancy and obesity in postmenopausal women. Other established risk factors are family history of breast cancer. histologic characteristics of benign tissue, mammography patterns, exogenous hormones and alcohol consumption [8]. In high risk families' genetic predisposition has also been established and BRCA-1 gene has been identified as primarily responsible for early onset breast cancer [9].

In breast cancer patients long-term survival depends not only on the early detection but also on various prognostic markers. Early detection is done by means of screening programs, which include self-assessment, mammography and fine needle aspiration biopsy[10]. This program has been implemented as a national screening programme in the United Kingdom, the United States and also in other developed countries. Mammography has been widely used for the assessment of impalpable breast lesions as well as for extremely small tumours of 1 to 2 mm size[11] This modality primarily relies on the presence of calcification for categorizing whether the lesion is benign or malignant. A recent study has classified breast carcinoma on the basis of the mammography finding[12]. According to this study, tumours of 10-14 mm size with casting type of calcification behaved aggressively as if they were larger lesions since the rate of death was similar to that of advanced high grade tumours. The long-terni survival of I -9 mm-size tumours with no casting type calcification was about 95%.

The prognostic significance of h istopathological typing, grading and staging of tumours is of proven value in the clinical management of breast cancer patients. but sometimes the histopathological assessment correlates poorly with the clinical outcome. Recently these conventional methods are augmented by new techniques for assess ing the type of the tumour, grade and stage, in order to improve the accuracy and reproducibility of prognostication. These prognostic indicators include receptors for hormones, growth factors and oncogenes. Breast cancers that express estrogen and progesterone receptors are associated with longer survival as compared to the negative ones [13]. A

number of oncogenes and tumour suppressor genes are expressed according to the behavior of tumours. These include c-myc, ras, p53 and c-erb B2/HER2/neu oncogenes[14]. The expression of c-erb B2 has been identified as an independent prognostic marker[15]. DNA ploidy, S-phase fraction and immunohistochemical detection of Ki-67 have been used as markers of cellular proliferation[16]. Tumours with high proliferation rates have a worse prognosis. The adoption of these markers in routine practice is slow and many laboratories may not have sufficient resources to implement them and the results do not necessarily influence the clinical management of individual patients.

In Pakistan there should be public awareness regarding breast cancer problem. This requires through communication media and imposition of mass education program. There is a need for establishment and implementation of breast cancer screening program, so that early lesions can be detected with a better survival.

Continued research on the cause of the disease, prevention and improved methods of detection and treatment are essential if we are to make inroads into this, the leading cancer in the world.

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