

correct diagnosis of MBC is important because although, the cells are very pleomorphic and have syncytial appearance, the tumour is less aggressive than DBC, NOS. Microarray study further revealed the molecular characterisation of these tumours. They belong to a subset of basal cell type of DBCs and express the basal keratins and markers similar to basal and myoepithelial cells⁹. Furthermore, they are less heterogenous and express immune response genes and genes belonging to apoptosis. This feature is noted in the MBC case presented here which shows high concentration of lymphocyte infiltration histologically. In contrast, extensive necrosis found in DBC are not seen in these tumours (Figure 1 and 3). Therefore, these tumours need to be differentiated from inflammatory breast lesions.

Inflammatory lesions such as depicted by patient 4 should be carefully assessed as they relapse and may mimic cancer. TB or atypical mycobacterium need to be excluded as the source of the inflammatory process and treated accordingly. Furthermore, they need to be differentiated from IBC. Although, IBC are localised they attain a very aggressive pattern. They may account for more than 5% of the breast tumours¹⁰. Tumour suppressor genes, TP53 mutations and other oncogenes such as ERBB2, CCND1 and metastasis related RHOC have been studied in these tumours. TP53 mutations were found to be 57% of the IBC, and 37% of locally advanced breast cancers, LABC. In addition, oncogene expression showed marked overexpression of ERBB2 while a moderate overexpression of CCND1 was seen in IBC. MYC expression was not significantly changed. Also, interestingly TP53 mutated tumours were ER negative as opposed to tumours containing wild-type TP53^{10,11}. Since IBC turn to be aggressive type, histological diagnosis along with marker expression studies are vital for their correct diagnosis as shown in Table II. This also demonstrates clearly that progression of cancer and the aggressive behavior is a multistep process and more and more signalling networks are involved with tumour growth. Therefore, researchers continuous pursuit for newer markers remains a constant challenge.

We have to keep in mind that distant metastasis is one of the main cause of death in breast cancer. With information generated by microarray and bioinformatic advancements researchers are evaluating markers correlating to metastasis. Recent discoveries are being made using knowledge and data generated by microarray. Van de Vijver et al have established a 70 gene prognosis signature

profile that classifies primary breast tumours having good or poor prognosis¹². Furthermore, it was shown that pathways that give rise to metastasis are the key challenges in breast cancer prognosis and treatment. Expression profiling further led to such discoveries of protein-network based approach using Systems Biology and its algorithms¹³. The study reveals that markers not as individual genes but as subnetworks have been extracted from protein-network databases. These have led to novel hypothesis for pathways and networks involved in cancer progression and metastasis. These will help immensely in diagnosis, prognosis and newer drug development for the future.

We have demonstrated the importance of early diagnosis and suggest that proper investigative methods and careful follow-up is needed for correct, prompt diagnosis and treatment of breast cancers. In addition, the importance of biomarkers and their use in diagnosis and follow-up of the individual cases need to be practised for correct diagnosis and evaluation of tumour stage and progression. We hope this comparative evaluation has been able to highlight features critical for correct and prompt diagnosis, better treatment measures and future perspectives.

Abbreviations

Ductal breast cancer, DBC, lobular breast cancer, LBC, medullary breast cancer, MBC and Inflammatory breast cancer, IBC.

Table I

Molecular Classification and Histological Type

Sl.	Type	Percentage approx	ER positive	ER negative	HER2/neu	Basal type
1.	DBC,NOS	approx. 70%	Mostly in the western population Good prognosis	Aggressive type Poor prognosis	+ Aggressive type, Poor prognosis	
2.	OTHERS MBC LBC IBC	approx. 30%	LBC Good prognosis	MBC Good prognosis	IBC Good prognosis	MBC

Note:

DBC Ductal Breast carcinoma, not otherwise specified.

Others includes: Medullary Breast carcinoma (MBC), Inflammatory Breast carcinoma (IBC) and Lobular carcinoma (LBC).