

Study of Pattern of Presentation and Diagnostic Accuracy of FNAC As Compared To Ultrasonography, In Detection of Breast Cancer among Tribal Females of Rural West Bengal

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Abstract: This study was done to investigate the pattern of presentation of breast cancer among tribal female of Bankura district of West Bengal where demographic parameters are largely different from other part of the state. The present study also tried to have a comparative analysis among the sensitivity, specificity and positive predictive value of Ultrasonography and Fine needle Aspiration Cytology in the detection of breast cancer among this tribal population. 92 tribal females attending surgical outdoor with breast lumps were included in the study. Their demographic parameters, mode of presentation, time lapse since first noticed, presence and absence of well-known breast cancer risk factors were studied. All patients were subjected to FNAC & USG and the findings of these two investigations were compared with the Histopathology reports when the patients came for a follow-up. Data were analyzed using the Statistical Package for Social Sciences software version 17 for Windows. Percentage, sensitivity, specificity, and positive predictive values (PPV) were calculated. The mean age of the study population was 39 ± 6.019 years and a range of 22 to 54 years. Among 92 patients 68 (74%) were diagnosed to have benign breast disease and 24 (26%) had carcinoma breast. Although the age of presentation of these patients did not differ from that of the western population but time lapse since first noticed and different well-known risk factors of breast cancer e.g. parity, usage of oral contraceptive pills differ markedly in the study group. The Sensitivity, Specificity & PPV of Ultrasonography were 91.67 %, 91.18% & 78.58 % respectively and that of FNAC was found as 95.83 %, 97% & 92 %. The study observed a late presentation of breast lump in tribal rural women of Bankura, West Bengal. Although the accuracy of the screening procedures like USG and FNAC are comparable with that of western world, whereas low literacy rate, poor breast cancer awareness and reluctance to obtain health care facility are the major barrier of the early detection of breast cancer in these regions.

Keywords: Breast Cancer, Diagnosis, Ultrasonography, Fine needle aspiration cytology.

I. Introduction

Breast cancer is the most common cancer in women worldwide. It is also the principle cause of death from cancer among women globally[1]. The term "breast cancer" refers to a malignant tumor that has developed mostly from the ductal epithelial cells in the breast. Less commonly, breast cancer can begin in the stromal tissues, which include the fatty and fibrous connective tissues of the breast [2]. The most common risk factors of breast cancer are obesity, lack of exercise, alcohol consumption, smoking and use of oral contraceptive pills. The uncontrollable risk factors are genetic mutations and family history of breast cancer. In general, women from higher socio-economical groups, regardless of their race/ethnicity, have higher rates of occurrence of breast cancer. Most of the breast cancers are asymptomatic. In some cases, however, the first sign of breast cancer is a new lump or mass in the breast. According to the American Cancer Society, any of the following unusual changes in the breast can be a symptom of breast cancer e.g. swelling of all or part of the breast, skin irritation or dimpling, breast pain, nipple pain or the nipple turning inward, redness, scaliness, or thickening of the nipple or breast skin, a nipple discharge other than breast milk, a lump in the underarm area[3].

At present, screening for breast cancer in women is regarded as effective way to reduce incidence of breast cancer. So a rapid and accurate diagnosis tool is crucial and fundamental in the implementation of breast cancer screening. The USG-FNAC (ultrasonography- fine needle aspiration cytology) techniques have acceptable diagnostic validity indices and can be used for early staging of breast cancer patients[4].

However, most of the above observations are done on the basis of Western Population. Recent studies indicate that cancer incidences, mortality, and survival rates vary according to geographic location and

tribe[5]. Socioeconomic factors have been shown to strongly influence the stage of disease presentation[6,7,8,9]. Less access to medical care, awareness, illiteracy of the population leads to late breast cancer screening [10,11].

Bankura District of West Bengal has much lower HDI (0.53), Income Index (0.26) and education index (0.62) as compared to other districts of West Bengal[12]. According to 2001 census 10.36% tribal population is living in this region. Little is known about the presentation of breast cancer among the tribal women of rural West Bengal, India, where the culture, life-style, socio-economic level and literacy rate in female differ greatly from Western countries.

Therefore the purpose of the present study was to investigate the pattern of presentation, and role of various other clinic-pathological parameter in tribal female patient with breast lump presenting to a rural medical college and hospital of Bankura. The present study is also an attempt to have a comparative analysis among the sensitivity, specificity and positive predictive value of Ultrasonography and Fine needle Aspiration Cytology in the detection of breast cancer among this tribal population.

II. Materials & Methods

This descriptive study was carried out in B. S. Medical College, Bankura, West Bengal, in the period of January 2011 to June 2012. All the tribal female patients presenting at surgical outpatient department of BSMC&H with clinically palpable breast lump either solitary or multiple, unilateral or bilateral irrespective of age, socioeconomic status and duration of complaint within this time period were included in the study. The tribal status of the subjects was recorded from their 'scheduled tribe' certificates issued by Govt. of West Bengal. Institutional ethical committee clearance and informed consent of all patients were obtained. Male patient with breast related diseases, patients with acute and tender breast lump like breast abscess, recurrent breast lump after definitive surgery for confirmed malignancy were excluded from the study. Total 92 patients fulfilled the criteria. They were admitted and were evaluated by detailed history, thorough physical examination were done. The variables studied included demographics, modes of presentation, time since first noticed and reason for delayed presentation.

Appropriate investigations of the subjects like ultrasound, FNAC and incisional or Trucut biopsy were done in the department of Surgery, Radiology and Pathology of BSMC, Bankura. The FNAC was performed using a 23G needle and 10 ml syringe with an average of four to six passes with constant suction. The breast lumps of the patients were excised on the Surgery OT under local/general anesthesia, and were sent for histopathologic examination. Where the lump was very big, incision biopsy was done at proper site and with proper orientation of the incision (With due consideration of future operation and other modalities of treatment, if they become necessary). The post-intervention patients were kept for observation overnight and discharged the next morning with the advice to continue antibiotics for 48 hours and to attend the outpatient department or emergency room in case any problem. The follow up visits were scheduled at 3 weeks, 3 months. The histopathology reports obtained at follow-up visits were used to compare the result of USG and FNAC. High frequency ultra sound image was used for diagnosis. Solid lesions with irregular shape, irregular margin, non-uniform distribution of internal echotexture, shadowing and calcifications in hypo-echoic lesions are suggestive of cancer by USG.

Data were analyzed using the Statistical Package for Social Sciences software version 17 for Windows. Sensitivity, specificity, and positive predictive values (PPV) were calculated.

III. Results

A total of 92 female patients presenting with breast lump were included in the study. Their mean age was 39 ± 6.019 years (range 22 years – 54 years). Among 92 patients, 68 (74%) were diagnosed to have benign breast disease and 24 (26%) had carcinoma breast.

26.26 % (n = 26) patients with Benign breast disease were within the age range of 21-30 years and 20.6% were below 19 years of age whereas 50% (n=12) patients with breast CA were more than 50 years of age.

All the 92 patients were from remote rural areas. There were 73 (79.34%) illiterate patients whereas 19 (20.65%) had primary to graduate level education. In 90.22% (n=83) cases the lump was detected accidentally by the patient herself, 47 (51.08%) of them took clinical opinion after 6 months of self-detection and 36.95% (n=34) within 2 to 6 months. (Table 1) 81.5 % patient took no clinical advice in this interim period whereas 17 (18.5%) patients used alternative medicines (e.g. homeopathy) during this time. 13 out of these 17 patients (76.47%) presented with breast cancer.

The most common presentation in both benign and carcinoma breast were painful lump (52%) and in most of the cases the pain was non-cyclical (81%). Other than pain and lump in the breasts, the most common symptoms were fever (19.5%, n=18), nipple discharge (10.86%, n=10), wound discharge (9.98%, n=9), redness (6.52%, n=6) and opposite breast pain (4.34, n=4). (Table 2) Only 12 (13.04%) patients gave history of benign breast disease among mother and first degree relatives, none of them had history of malignant breast disease in the family. 3 patients (12.5%) with malignant breast disease and 6 patients (8.82%) with benign breast tumor

had history of OCP intake for more than 2 years. Out of 24 breast cancer patient 19 (79.66%) were multipara and only 5 (20.83%) were nullipara.

The Sensitivity, Specificity & PPV of Ultrasonography were 91.67 %, 91.18% & 78.58 % respectively and that of FNAC was found as 95.83 %, 97% & 92 %. (Table 3)

IV. Tables

Table 1: Demographic parameters of the patients presenting with breast lump

Address of the Patient(n=92)	Literacy level (n=92)	Mode of Detection(n=92)	Time lapse since lump first noticed(n=92)
Rural remote areas 100%	Illiterate: 73 (79.34%)	Self-accidental detection 90.22% (n=83)	2-6 months: 81.5%
	Primary to graduate level: 19 (20.65%)	Physical examination by Physician 7.6%(n=7)	≥ 6 months: 36.95%
		Other 2.18% (n=2)	

Table 2: Symptoms and Signs of presentation of Breast lump:

Symptoms (n=92)		Pattern of Complaint(n=92)		Gross Appearance (n=92)			
Unilateral Breast Lump	88%	Pain	52%	Benign (n=68)		Malignant(n=24)	
Bilateral breast lump	12%	Fever	19.5%	Localized growth	100%	Localized growth	50%
		Discharge from nipple	10.86%			Ulcerated growth with destruction of nipple	33.33%
		Redness	6.52%			Infected fungating growth	16.67%
		Pain in the opposite breast	4.34%				

Table 3: Results of Ultrasonography and FNAC in the diagnosis of Breast Cancer

Test	Biopsy +/- Breast Cancer (n)	Biopsy -/ No Breast Cancer (n)	Total (n)	Sensitivity, Specificity & PPV
Ultrasonography				
Benign	2	62	64	Sensitivity 91.67 %, Specificity 91.18% & PPV 78.58 %
Malignant	22	6	28	
FNAC				
Benign	1	66	67	Sensitivity 95.83 %, Specificity 97% & PPV 92 %
Malignant	23	2	25	

V. Discussion

Carcinoma of breast continues to be a major killer of women all around the world. The incidence and pattern of this disease, however, differ significantly between developed and under-developed countries [13, 14]. In developing countries many factors modulate the presentation of the breast diseases such as unequal distribution of health care facilities, lack of knowledge about the disease, poverty, and social customs of the families avoiding women exposure.

In this study 26.26 % (n = 26) of patients with Benign breast disease (n=68) were within the age range of 21-30 years and 20.6% were below 19 years of age whereas 50% (n=12) patients with breast CA (n=24) were more than 50 years of age. This observation is in accordance with a previous study done by Vissya Shanti et al and Reeni Malik et al in 2003 [15].

Majority of our study subjects belonged to remote, under-resourced areas presenting late in the course of the disease (>6 months after detection of lump). Painful breast lump were there most common presentation and most of the lumps were observed by accidental self-detection. 79.34% (n=73) of patients in this study were illiterate and only 19 (20.65%) had primary to graduate level education. This shows the unawareness of this rural tribal female community about breast cancer symptoms and the health care facility available to detect it in early stage. This is consistent with the findings of many previous similar studies [16,17,18].

Only 3 patients (12.5%) with malignant breast disease and 6 patients (8.82%) with benign breast tumor of the present study had history of OCP intake for more than 2 years. This finding differs from the previous studies that show women using oral contraceptives (birth control pills) have a slightly greater risk of breast cancer than women who have never used them [19, 20, 21].

Out of 24 breast cancer patient 19 (79.66%) were multipara and only 5 (20.83%) were nullipara. This observation is also not in agree with the previous study reports that demonstrate that women who have had no children or who had their first child after age 30 have a slightly higher breast cancer risk[22, 23].

The Sensitivity, Specificity & PPV of Ultrasonography were 91.67 %, 91.18% & 78.58 % respectively and that of FNAC was found as 95.83 %, 97% & 92 %. This result is almost comparable to the observations

obtained by S. Usmani et al [24] and Yumjaobabu Singh TaKhellambam et al [25] among western population. Thus it shows that it is not inaccuracy of screening programme in underdeveloped countries but lack of either basic advances in health literacy or absence of tailored approaches to help women with low literacy to navigate local health care systems, are major factors in delaying the diagnosis of breast cancer[26].

Limitation: It is a single institutional study. Further studies on the current topic using multiple centers and with a large sample size are therefore recommended to have more clear idea about the pattern of the presentation of breast cancer among rural tribal women.

VI. Conclusion

The study observed a late presentation of breast lump in tribal rural women of Bankura, West Bengal. Although the accuracy of the screening procedures like USG and FNAC are comparable with that of western world low literacy rate, poor breast cancer awareness and reluctance to obtain health care facility are the major barrier of the early detection of breast cancer in these regions.

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