Clinico-Demographic Characteristics of CA 15-3 Biomarker Positive Recurrent Breast Carcinoma Patients

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Introduction

- Recurrent breast cancer returns after completion of initial treatment

- Recurrence of disease refers to occurrence of tumour in the breast after breast conserving therapy, in the chest wall ipsilateral/parasternal/supra or infra clavicular lymph nodes, skin of chest wall, reconstructed breast and as distant metastases

Introduction

- Breast cancer and recurrent breast cancer is the fifth cause of cancer-related deaths with an estimated number of 23.3 million new cases worldwide

- Advanced stage of the disease, poorly differentiated cancer are major risk factors of recurrent breast cancer

Introduction

- In most cases, recurrent cancer appears within first three years after completion of treatment
- For patients with a positive family history of BRCA 1, BRCA 2 gene mutation, the cancer recurrence rate is higher
- On average, 7 percent to 11 percent of women with early breast cancer experience a local recurrence during the first five years after treatment

Introduction

- Several studies have previously reported that cases with high grade tumor, large tumor size, axillary nodal involvement and negative ER and PR have increased chance of recurrence

- Serum Cancer Antigen 15-3 (CA15-3) are established prognostic marker in breast cancer patients

- Kurebayashi et al have demonstrated that CA 15-3 may have a role in monitoring response to chemotherapy in breast cancer patient

Introduction

- This was reinforced by Duffy et al, who suggested that the most important role for CA 15-3 is in monitoring therapy in patients with advanced and recurrent breast cancer

- The purpose of this study was to assess clinico-demographic characteristics of CA 15-3 biomarker positive recurrent breast carcinoma patients

Methodology

Study settings and Population

- Analytic cross-sectional study
- Place of study : Department of Surgery and Department of Radiotherapy, Dhaka Medical College Hospital. Department of Surgical Oncology, NICRH
- Study period : December 2021 to June 2022 for 7 months

Selection criteria

- **Inclusion criteria** : patients who presented with recurrent breast carcinoma after completion of primary treatment and age of 18 years or above

- **Exclusion criteria** : patients who have not completed primary treatment and male patients

Study procedure

- Purposive sampling technique
- Histological diagnosis was established either by core biopsy or excisional biopsy
- After obtaining informed written consent and approval of ethical review committee, patient's history was taken and clinical examination was done

Study procedure

- Variables analyzed include age, type of surgery done during primary treatment, CA 15-3 level during follow up, mode of recurrence, contraceptive history, menstrual history and family history

- Serum CA 15-3 was measured by ELISA and cut-off value of 30 U/ml was stratified

- Serum CA 15-3 was estimated at the time of follow-up

Statistical analysis

- Data were collected in a predesigned data collection sheet
- Data were processed and analyzed by using computer software SPSS-21.0
- Probability value <0.05 was considered as level of statistical significance
- Statistical analysis was done by students' t-test for quantitative variables and Chi-square ($\chi 2$) test for qualitative variables

Results

Table 1: Age Distribution of the Study Population (n=51)

Variables		Frequency	Mean ± S.D.
Age	18 to 30 years	0(0%)	48.3±9.6
	31 to 40 years	10(19.6%)	
	41 to 50 years	**29(56.9%)**	
	51 to 60 years	12(23.5%)	
CA15-3 Level	<30 U/mL	9 (17.6%)	9.4±2.3
	>30 U/mL	**42 (82.4%)**	71.7±9.4

Results

Table 2: Clinicopathological characteristics of patients (n=51)

Variables	Frequency	Percentage
Menopausal status		
Premenopausal	**29**	**56.9**
Postmenopausal	22	43.1
Pathology		
Invasive ductal carcinoma	**47**	**92.1**
Invasive lobular carcinoma	4	7.9

Results

Table 2: Clinicopathological characteristics of patients (n=51)

Nature of recurrence		
Local recurrence	**15**	**29.4**
Locoregional recurrence (breast + axillary lymph nodes)	**14**	**27.4**
Distant (e.g., bone)	1	1.9
Chest wall recurrence	7	13.7
Opposite breast/ ipsilateral	2	3.9
Local + Distant	5	9.8
Flap recurrence	7	13.7

Results

Table 2: Clinicopathological characteristics of patients (n=51)

Type of previous surgery		
Modified Radical Mastectomy	**18**	**35.3**
Lumpectomy	**16**	**31.3**
Breast-Conserving Surgery / WLE with SLNB	7	13.7
Simple mastectomy with level II axillary lymph node dissection	10	19.6

Results

Table 3: The relationship between CA 15–3 levels with clinicopathological characteristics (n=51)

Variables	Total number of patients (n=51)	Patients with raised CA 15-3 (n=42)	p-value
Menopausal status			
Premenopausal	29	22(75.9)	0.067
Postmenopausal	22	20(95.2)	
Pathology			
Invasive ductal carcinoma	**47**	**41(87.2)**	**0.009**
Invasive lobular carcinoma	4	1(25.0)	

Results

Table 3: The relationship between CA 15–3 levels with clinicopathological characteristics (n=51)

Variables		Total number of patients (n=51)	Patients with raised CA 15-3 (n=42)	p-value
Recurrence in same or opposite breast		22	18 (81.8)	0.543
Others (distant, chest wall, flap)		15	11 (73.3)	
Locoregional recurrence (breast + axillary lymph nodes)	**Yes**	**14**	**14(100%)**	**0.005**
	No	37	29(78.3)	

Results

Table 4: Distribution of Study Population according to Family History of Breast Cancer and use of OCP (n=51)

Previous History		Frequency	Percent
Family History of Breast Cancer	Yes	12	23.5
	No	**39**	**76.5**
Use of OCP	**Yes**	**44**	**86.3**
	No	07	13.7

Discussion

- Breast cancer recurrence is a significant problem for clinicians

- Patients with early stage of the disease (stage I–II) have a recurrence rate of ~ 30%, and local recurrences after conserving therapy have been reported from 6% to 12% at 5 and 10 years, respectively

Discussion

- In this study majority, **29(56.9%) patients belonged to age 41-50** years, followed by 12(23.5%) patients belonged to age 51-60 years. The **mean age** was found **48.3±9.6 years**

- Findings are consistent with other studies. In a study among 100 female patients, age at diagnosis ranged between 24 and 80 years with a **mean age of 47.7 years**. **More than half** of the patients **(54.0%)** were diagnosed between the age of **40 and 60 years**

Discussion

- Present study shows that, **42** patients had high serum levels of CA15-3 with mean value **71.7±9.4**

- The relationship between CA 15–3 levels with clinico-pathological characteristics shows, CA 15-3 levels were significantly higher in case with invasive ductal carcinoma patients **(p = 0.009)**

- Although CA 15-3 levels were higher in invasive lobular carcinoma patients, they did not reach statistical significance

Discussion

- There was no association between CA 15–3 levels and menopausal status
- There is a significant positive correlation in between CA 15-3 level with locoregional recurrence (breast and axillary lymph nodes)
- **All patients (100.0%)** patients with locoregional recurrence have raised CA 15-3 level

Limitations

Despite the diagnostic accuracy of CA 15-3 in this study, its limitations must be acknowledged. Purposive sampling introduces potential bias, its impact is reduced by the small sample size. Unaccounted confounding factors, such as treatment variations, and the lack of detailed primary tumor characteristics limit the study's applicability

Conclusion

- Most of the women are in the middle age who are suffering from recurrent breast cancer
- Invasive ductal carcinoma is the most common variant of recurrent breast cancer
- Local recurrence is most common followed by loco regional recurrence and chest wall recurrence
- Modified Radical Mastectomy is the most common type of previous surgery

THANK YOU