Original Article

Retrospective Analysis of Incidence of Breast Cancer from North Western India-Single Institute study

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ABSTRACT:
Background: Breast cancer is the most frequently diagnosed cancer in women. Breast cancer occurs more common in females worldwide and India. There are few studies on the incidence of breast cancer in the state of Rajasthan. The present study evaluates its temporal variation and area-wise distribution. **Materials and Methods:** Five-year retrospective data on Breast cancer incidence were obtained from Hospital-Based Cancer Registry (HBCR) of Regional Cancer Centre (RCC), Bikaner, from January 2016 to December 2020. The trend of Breast cancer incidence over these 5 years, increases. District‑ wise distribution of patients was also analyzed. **Results:** Of 37132 cases registered at RCC, Bikaner, from January 2016 to December 2020, there were 3005 cases of Breast cancer accounting for 8.09% of the total, among these, them 63 males and 2942 females. The diagnosis of Breast cancer was most commonly at 5th decade and 7th decade of life in female and male respectively. 5 years data showed that an increasing trend of Breast cancer incidence over 5 years. The highest incidence rate was found in the districts of Sri Ganganagar, Hanumangarh, Bikaner and Churu, with most patients coming from Sri Ganganagar district. **Conclusion:** Breast cancer cases have shown an increasing trend in the past 5 years in Rajasthan with a higher incidence in the higher incidence in the North‑ Western districts. It is required to reduce risk factors and multidisciplinary approach including, awareness program, preventive measure, screening programs to prevent its incidence.
Keywords: Bikaner, Breast cancer, incidence, Rajasthan, trend

INTRODUCTION

Breast cancer is the most frequently diagnosed cancer in women. According to Globocan 2020 data it was 1st most common overall malignancy worldwide and also 1st most common overall malignancy in India, by incidence respectively. Breast cancer was 4th and 1st most common cause of cancer related deaths in world and India respectively. In India, deaths due to breast cancer were 90,408 in 2020, which were 10.6% of total cancer deaths[(1)]. The incidence of breast cancer increases exponentially upto the age of menopause, after which risk decreases. Younger women have greater lifetime risk. The causation of breast cancer is multifactorial, ranging from geographic, ethnic, racial factors to genetic, environmental and personal factors[(2)].

Significant risk factors include personnel and family history of breast cancer, nulliparity or late age at first child, early menarche, late menopause, prior breast biopsy with hyperplasia, atypical hyperplasia, high breast tissue density, radiation exposure at a younger age, alcohol consumption, use of OCPs and use of postmenopausal hormonal therapy[(3)]. Breast-feeding, physical activity and maintaining a healthy body weight have been associated with lower risk of breast cancer[(4,5)].

Research studies conducted earlier in the country have observed age of diagnosed of Breast cancer between 45 to 50 years[(6-8)] . Treatment of breast cancer is a multimodality approach including surgery, Radiotherapy chemotherapy and hormone therapy[(9)]. The present study evaluates the temporal variation of

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Breast cancer incidence over period of 5 years (2016-2020) and its district- and tehsil-wise distribution in Rajasthan.

MATERIALS AND METHODS
It was a single center, retrospective study which involved 5 years data of Breast cancer incidence from Hospital Based Cancer Registry (HBCR) of Regional Cancer Centre (RCC), Bikaner, India, from January 2016 to December 2020. Being a retrospective study, no ethical approval was required for the study as all the patients were treated with the standard departmental protocol.

RESULTS
Breast cancer contributed 8.09% of total cancer cases (n=3005) registered at RCC, Bikaner, from January 2016 to December 2020. In the last 5 years, Breast cancer incidence increased, which showed in table no. 1 and figure no. 1.

Table 1: Year- wise distribution of Breast cancer patients in Rajasthan

Year	Breast cancer patients		
	Male	**Female**	**Total**
2016	17	540	557
2017	4	585	589
2018	9	520	529
2019	16	668	684
2020	13	633	646
Total	59	2946	3005

Figure 1: Year wise distribution of Breast cancer patients in Rajasthan
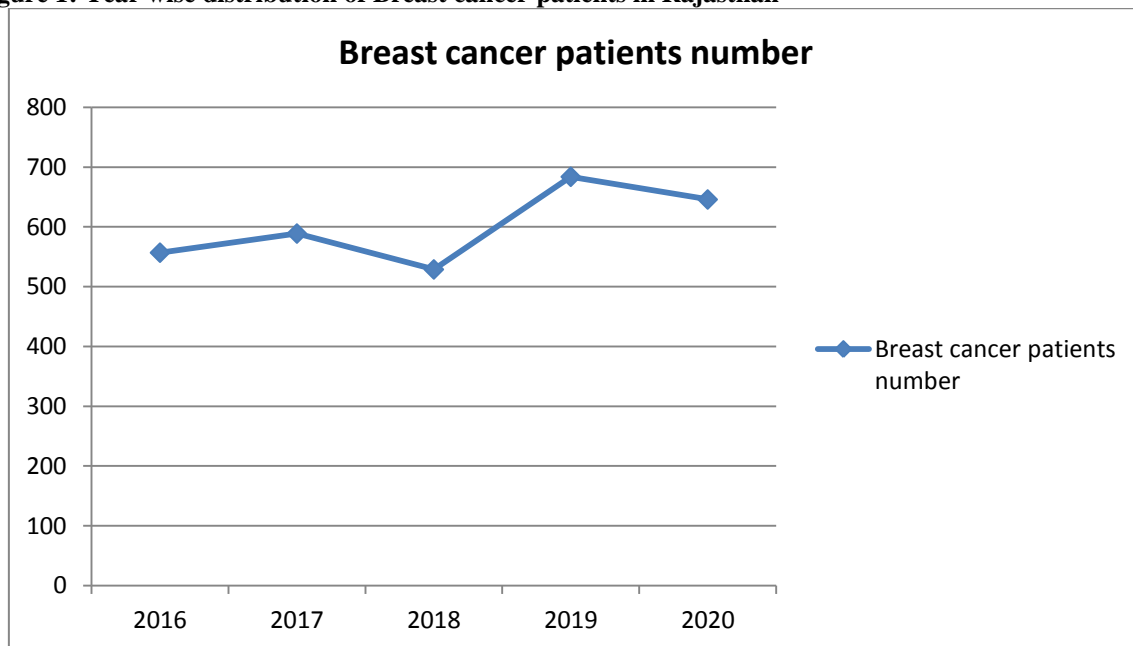
Table 2: Tumor laterality of breast cancer in patients

Year	Right side	Left side	Both side	Total patients
2016	166	387	4	557
2017	187	399	3	589
2018	176	350	3	529
2019	213	465	6	684
2020	215	427	4	646
Total	957	2028	20	3005

Breast cancer occur more commonly in Left side compare to Right side breast (Left:Right = 2.1:1)

Table 3: Age- wise distribution of Breast cancer patients in Rajasthan

Age (in years)	Numbers of Breast cancer patients (n = 3005)	
	Males	Females
40 or less	3	538
41-50	8	845
51-60	19	791
61-70	22	585
71 or more	7	187
Total	59	2946

The age of patients ranged from 17 years to 92 years. Most common age presentation of breast cancer in male and female patients in 7th and 5th decades of life, respectively

Table 4: Histology-wise distribution of Breast cancer in Rajasthan

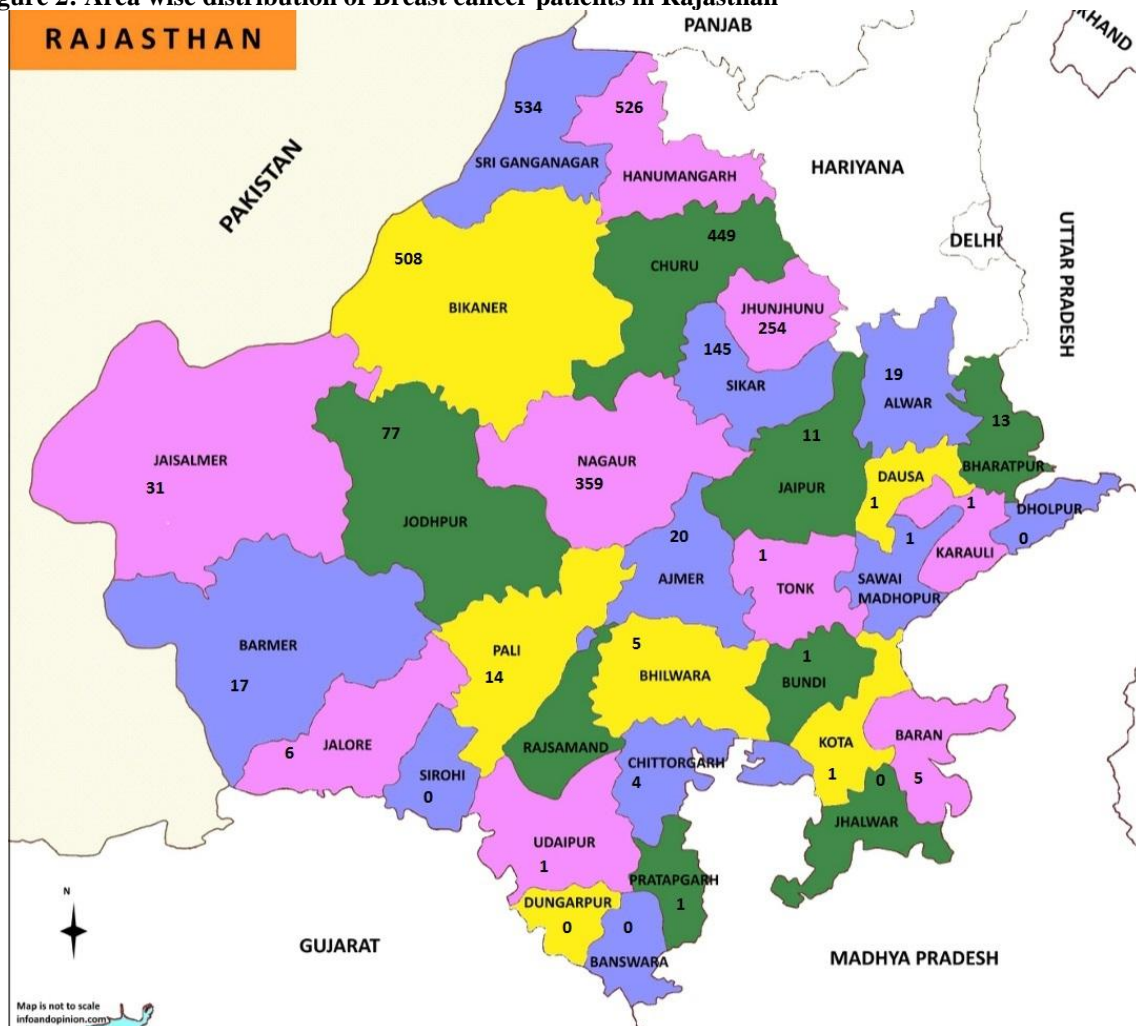| Histology	Breast cancer patients numbers (n=3005)
Invasive ductal carcinoma	2212
Lobular carcinoma	44
Carcinoma in situ	20
Squamous cell carcinoma	16
Adenocarcinoma	71
Mucinous carcinoma	15
Papillary carcinoma	12
Malignant phylloides tumor	18
Metaplastic carcinoma	1
Medullary carcinoma	23
Invasive mammary carcinoma	67
Spindle cell variety	2
Sarcoma	8
Not specify	496
Total	**3005**

Most common histology was Invasive ductal carcinoma in 73% cases.

Table 5: Area wise distribution of Breast cancer patients in Rajasthan

District	Numbers of patients
Ajmer	20
Alwar	19
Banswara	0
Baran	5
Barmer	17
Bharatpur	13
Bhilwara	5
Bikaner	508
Bundi	1
Churu	449
Chittorgarh	4
Dausa	1
Dholpur	0
Dungarpur	0
Hanumangarh	526
Jaipur	11
Jaisalmer	31
Jalore	6
Jhalawar	0
Jhunjhunu	254
Jodhpur	77
Karauli	1
Kota	1
Nagaur	359
Pali	14

Pratapgarh	1
Rajsamand	0
Sawai madhopur	1
Sikar	145
Sirohi	0
Sri ganganagar	534
Tonk	1
Udaipur	1

Figure 2: Area wise distribution of Breast cancer patients in Rajasthan

Maximum Breast cancer patients from Sriganganagar followed by Hanumangarh and Bikaner districts.

Table 6: Tehsil- wise distribution of Breast cancer patients in district

Sri ganganagar Tehsils	Breast cancer patients numbers (n=534), n (%)
Anoopgarh	5 (0.94%)
Ganganagar	437 (81.83%)
Gharsana	11 (2.06%)
Karanpur	11 (2.06%)
Padampur	23 (4.31%)
Raisinghnagar	11 (2.06%)
Sadulshahar	2 (0.38%)
Suratgarh	24 (4.49%)
Vijaynagar	9 (1.69%)
Rawla mandi	1 (0.18%)

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In Sri ganganagar district, maximum patients from ganganagar tehsil.

DISCUSSION

Breast cancer is the most frequently diagnosed cancer worldwide and a significant cause of cancer related death in women also. In India, Breast cancer is most common diagnosed cancer in women. The causation of breast cancer is multifactorial, including personnel and family history of breast cancer, nulliparity or late age at first child, early menarche, late menopause[10,11]. Family history of Breast cancer increases risk by two to three folds[7,12,13]. Breast-feeding, physical activity and maintaining a healthy body weight have been associated with lower risk of breast cancer[4,5]. The treatment of breast cancer is multidisciplinary approach including surgery, radiotherapy, chemotherapy and/or hormone therapy.

The 5 years data revealed that a significant increase incidence of Breast cancer over 5‑ year period in Rajasthan, with other population registries in India showing similar increasing trends. Delayed disease presentation due to lack of awareness, illiteracy, financial constrains leads to late diagnosis, that also cause increasing mortality rate due to Breast cancer. Hence a multidisciplinary approach including, awareness program, preventive measure, screening programs for early detection and availability of treatment facilities are vital role for reducing incidence and mortality of breast cancer in Rajasthan women.

LIMITATION

Data in the present study have been obtained from a HBCR of RCC, Bikaner, and might not represent the exact area‑ wise distribution of Breast cancer cases in the state.

CONCLUSION

Breast cancer cases have shown an increasing trend in the past 5 years in the state of Rajasthan. High incidence is seen in the North‑ Western districts . There is need to control the modifiable risk factors and multidisciplinary approach including, awareness program, preventive measure, screening programs for reducing the incidence of Breast cancer in Rajasthan.

ACKNOWLEDGMENTS

FINANCIAL SUPPORT AND SPONSORSHIP

CONFLICTS OF INTEREST
There are no conflicts of interest.

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