

Table 6 (Total cases = 9)

TYPE	AR	%
1	3	33
2	3	33
3	2	22
4	1	11
5	0	0
6	0	0
7	0	0
8	0	0
TOTAL	9	100

AR expression and tumour type

(Table-6): Out of the nine AR positive cases, maximum cases were IDC NOS type and ILC types (33% or 3/9 cases each, respectively). Two cases (22%) were of mixed type where as only one case was of medullary carcinoma, showing positive AR expression. The maximum frequency of AR positivity in IDC and ILC tumors shows that AR positivity is marker of bad prognostic cancer types.

Table 7 (Total no. of cases = 25)

	ER+	%	ER-	%
AR+	7	58.33	2	18
AR-	5	41.66	11	82
TOTAL	12	48	13	52

AR expression and ER expression

(Table-7): Out of total 25 cases included in the study, twelve (48%) cases were ER positive and rest 13 (52%) cases were ER negative. Of the ER positive cases seven (58.33%) cases were AR positive and the rest five (41.66%) cases were AR negative. Of the ER negative cases, two (18%) cases were AR positive and the rest 11 (82%) cases were AR negative. (Fig. 2, 3, 4, 5, 6.)

Discussion

Utility of ER expression in breast cancer, as a prognostic marker, is well documented. Lately, there has been a need to identify more prognostic factors. Among these, AR expression is less documented. Earlier studies have focused on ER positive tumors and have shown some association between AR status and disease free survival, as well as response to endocrine therapy. Our study focused on AR expression in breast carcinoma cases and correlation with various established prognostic markers, including ER expression, more so in cases having negative ER expression. Positive AR expression was observed in 9 (36%) cases. Among the various prognostic parameters analyzed, AR expression showed positivity with increasing age of the patients. Agoff et al and Bryan et al in concordance with a similar study conducted this. The incidence of breast cancer is high in elderly females, when the androgenic levels are high, and the risk of breast cancer is high in women with high estrogen levels than those with high androgen levels. It has been shown in animal models that

testosterone in combination with estrogen can induce high incidence of mammary carcinoma. Increasing tumor grade and relatively poor prognostic types like IDC NOS, also showed increase in AR positivity. This was in concordance with study performed by Isola and Agoff et al. The expression was also found more in cases with higher tumor stage i.e. 37.5% cases in stage 3B. Lymph node positivity and family history, however, failed to show any significant associations.

Our study focused on identifying association of AR expression in cases of ER negative tumors. Only 18% cases with ER negativity showed positive AR expression. On the other hand 58.33% cases showed ER and AR positivity. This higher percentage was also noted by Agoff et al. However, lesser number of ER negative cases showing AR positivity was contrasting with observations by Agoff et al. This might have been due to inclusion of lesser number of ER negative cases. On the whole, however AR can be included as an independent prognostic marker for breast carcinoma. The results of Agoff et al and Bryan et al, revealing significance of survival of patients with AR expression and lacking ER expression, further substantiates the utility of studies like the present one in identifying more prognostic factors for breast carcinoma.

Conclusion:

1. Androgen receptor (AR) expression is associated with increasing age, tumor grade, stage and poor prognostic breast cancer types.
2. AR expression was seen more in ER positive cases, than ER negative cases.
3. AR expression could be an independent prognostic factor in invasive duct breast carcinomas.

Recommend Reading

1. Agoff SA, Swanson P, Linden H, Hawes S, Lawton TJ. Androgen receptor expression in estrogen receptor negative breast cancer. *Am J Clin Pathol* 2003; 120(5): 725-31.
2. Bryan R M, Mercer RJ, Bennet RC et al. Androgen receptors in breast cancer. *Cancer* 1984; 54: 2436-40.
Isola JJ. Immunohistochemical demonstration of androgen receptor in breast cancer and its relationship to other prognostic factors. *J Pathol*, 1993; 170: 31 - 5.
3. *Elias JM. Principles and techniques in diagnostic immunohistochemistry and enzyme histochemistry. New York: Noys publications. 1982: 118.*

JIMSA - BEST PUBLISHED ARTICLE AWARDS

Journal of International Medical Sciences Academy has instituted award for three (3) best original articles published during the previous 3 years; **guidelines** are as below :

- (i) **Original articles** belonging to any discipline of medicine published in JIMSA during the previous three years.
- (ii) Age limit for the author (preferably the principal author) should be 45 years and below; may be relaxed under exceptional circumstances on the recommendation of the committee.
- (iii) Number of awards : Three (3) annually, carrying a gold plated medal, citation and cash prize (1st Rs. 3000/-, 2nd Rs. 2000/-, 3rd Rs. 1000/-)
- (iv) Awardee should preferably be a Fellow/Member of IMSA: non-fellows/non members can also be considered for the award if the original work is outstanding.
- (v) Awardees should preferably plan to receive the award at the Annual IMSA Conference - IMSACON; in case he is unable to attend the conference, the award can be sent through courier if desired.