

*Research Article***Immunohistochemical study of GATA3 and Androgen receptors in breast cancer****Manal I. Abd Elghany, Fatma El Zahraa A. Saleh, Nisreen D. Mohamed and Maggie S. Boshra**

Department of Pathology, El-Minia Faculty of Medicine

Abstract**Introduction:** Breast carcinoma (BC) is a major global problem, with nearly 1.7 million new cases occurring among women worldwide each year (International Agency for Research on Cancer, 2016).**The aim of this work was to:** Study the immunohistochemical expressions of GATA 3 binding protein (GATA3) and Androgen receptor (AR) in invasive duct carcinoma. **Material and Methods:****Tissue specimens:** The present study comprised 61 formalin – fixed, paraffin – embedded tissue specimen invasive duct breast carcinoma. They were randomly selected and retrieved from the archives of histopathological laboratories of Minia oncology center, pathology department, in period between 2012 and 2016. **Results: Clinicopathological features:** The current study included 61 cases of invasive duct carcinoma (NST) of female breast. Data regarding different clinical and histopathological features for cases investigated in this study. **Discussion:** Breast cancer (BC) is one of the most frequent cancers worldwide and is considered the second leading cause of carcinoma related death (15%) after lung carcinoma (Baade, 2017). **Summary:** Breast carcinoma (BC) is a major global problem, with nearly 1.7 million new cases occurring among women worldwide each year.**Keywords:** Breast carcinoma (BC), Expressions of GATA 3**Introduction**

Breast carcinoma (BC) is a major global problem, with nearly 1.7 million new cases occurring among women worldwide each year (International Agency for Research on Cancer, 2016). BC is the most frequently diagnosed cancer among women in 140 of 184 countries worldwide (Ferlay et al., 2013; Chen et al., 2014). BC constitutes about 25% of all carcinoma cases diagnosed annually and is considered the second leading cause of carcinoma related death (15%) after lung carcinoma (Baade, 2017), accounting for 458,000 deaths each year (Altobelli et al., 2017)

The incidence of BC worldwide, is the highest in developed countries, but it is also increasing at alarming rates in middle and low-income countries (Youlten et al., 2012; International Agency for Research on Cancer, 2016). Women in developing countries tend to present with more advanced BC upon initial diagnosis as compared to women in developed countries (Baade, 2017). Mortality from BC has decreased significantly in developed countries over the past few decades, as a result of earlier

diagnosis and wide availability of multimodality therapy (Panieri, 2012). For example, in western Europe, breast cancer incidence has reached more than 90 new cases per 100 000 women annually, compared with 20 per 100 000 in middle Africa. In contrast, breast cancer mortality rates in these two regions are almost identical, at about 15 per 100 000, which clearly points to a later diagnosis and much poorer survival in middle Africa (Ferlay et al., 2013; Altobelli et al., 2017).

Aim of the work**The aim of this work was to:**

- Study the immunohistochemical expressions of GATA 3 binding protein (GATA3) and Androgen receptor (AR) in invasive duct carcinoma.
- Study the association between immunohistochemical expressions of both GATA3 and AR and different clinicopathological features.
- Investigate the presence of possible correlation between immunohistochemical expressions of GATA3 and AR in invasive duct carcinoma (NST).

- Evaluate the prognostic significance of AR and GATA3 expressions in invasive duct carcinoma.

Material and Methods

Tissue specimens

The present study comprised 61 formalin – fixed, parafin – embedded tissue specimen invasive duct breast carcinoma. They were randomly selected and retrieved from the archives of histopathological laboratories of Minia oncology center, pathology department, in period between 2012 and 2016.

The available clinicopathological data were obtained from the pathology reports of the cases. These data included patients' age, tumor size, tumor site, laterality, grade, stage , lymph node status and menopausal status. In addition immunohistochemical data regarding ER, PR, Her 2 tumor markers were included.

The patients' ages were categorised into 2 groups; >50 years, ≤ 50 years at the onset of diagnosis (Tominage et al., 2012; Pisteli et al., 2014; Samaka and Younes, 2016).

Histological grading was done according to Scarff-Bloom-Richardson (SBR) grading system (Tavassoli and Devilee, 2010).

Tumors were staged according to AJCC staging system (AJCC, 2017). Molecular subtypes were classified according to St Galen Consensus 2013 (Goldhirsch et al., 2013).

The Nottingham Prognostic Index (NPI) was calculated using the formula ((0.2x S) + N+ G) (Galea et al., 1992).

According to National Cancer Institute, relapse free survival (RFS) was defined as “The length of time after primary treatment for a cancer ends that the patient survives without any sign or symptoms of that cancer” in clinical trials, measuring RFS is one way to see how well a new treatment, it also called disease free survival(DFS) (www.cancer.gov).

Results

Clinicopathological features

The current study included 61 cases of invasive duct carcinoma (NST) of female breast. Data regarding different clinical and histopathological features for cases investigated in this study are summarized in table.

The mean age ± standard deviation (SD) of the studied cases was 47.6 ± 12.81, and the median was years ranging from 24 -75 years, Patients in this series were stratified into two age groups: 36 (59.1%) patients were ≤ 50 years and 25 (40.9%) patients were > 50 years.

Table: Survival data and clinical outcome (n=61)

DFS/ RFS	Survival data and clinical outcome	
	Absent (censored)	40 (65.6%)
	Present (event)	21 (34.4%)

- Follow up duration= 8-48 months
- The median follow up was 20 months
- RFS= relapse free survival.
- DFS= disease free survival.

Discussion

Breast cancer (BC) is one of the most frequent cancers worldwide and is considered the second leading cause of carcinoma related death (15%)

after lung carcinoma (Baade, 2017). Breast cancer survival has improved significantly over the last 30 years (Jemal et al., 2008). However, therapeutic failure, local recurrence and distant metastasis has been a major challenge in the

treatment of breast cancer (Wu et al., 2012). Therefore, exploring novel markers to predict responsiveness of treatment, tumor progression and potential target therapies is becoming crucial important.

Summary

Breast carcinoma (BC) is a major global problem, with nearly 1.7 million new cases occurring among women worldwide each year. It is the most frequently diagnosed cancer among women in 140 of 184 countries worldwide. About 26% of all carcinoma cases diagnosed annually and is the second leading cause of carcinoma related death after lung carcinoma, accounting for 458,000 deaths each year. However, therapeutic failure, local recurrence and distant metastasis has been a major challenge in the treatment of breast cancer. Therefore, exploring more markers to predict responsiveness of treatment, tumor progression and potential target therapies is becoming more and more important.

References

1. Abati, A., & Simsir, A. (2005). Breast fine needle aspiration biopsy: prevailing recommendations and contemporary practices. *Clinics in laboratory medicine*, 25(4), 631-654.
2. Azim, H. A., & Ibrahim, A. S. (2014). Breast cancer in Egypt, China and Chinese: statistics and beyond. *Journal of thoracic disease*, 6(7), 864. e0174843.
3. Güth, U., Huang, D. J., Holzgreve, W., Wight, E., & Singer, G. (2007). T4 breast cancer under closer inspection: a case for revision of the TNM classification. *The Breast*, 16(6), 625-636.
4. Howlader, N., Noone, A. M., Krapcho, M., Neyman, N., Aminou, R., Waldron, W., & Cho, H. (2015). SEER Cancer Statistics Review, 1975–2008, National Cancer Institute. Bethesda, MD. Based on Nov. 2010 SEER data submission, posted to the SEER website, 2011. *Google Scholar*.
5. Groep, P., van der Wall, E., & van Diest, P. J. (2011). Pathology of hereditary breast cancer. *Cellular oncology*, 34(2), 71-88.
6. Koo, J. S., Jung, W., & Jeong, J. (2009). The predictive role of E-cadherin and androgen receptor on in vitro chemosensitivity in triple-negative breast Cancer. *Japanese journal of clinical oncology*, 39(9), 560-568.