Evaluation of Insulin-like Growth Factor II Mrna Binding Protein 3 (IMP3) Expression in A Group of Iraqi Women with Breast Cancer

Basim M. Khashman[1], Thuraya K. Alwandawi[2], Ghada Nazar Al-Jussani[3]
[1]National Cancer Research Center (NCRC), University of Baghdad, Iraq.
[2]Department of Basic Science, College of Dentistry, Al -Iraqia University, Iraq.
[3]Department of basic medical sciences, Faculty of medicine, The Hashemite University, P.O. Box 330127, Zarqa 13133, Jordan
*e-mail: basim@bccru.uobaghdad.edu.iq

Abstract
Background: Breast carcinoma is a first top ten cancers nationally according to the latest Iraqi cancer registry in 2019 Materials and Methods: Twenty-five Infiltrative ductal breast cancer blocks were collected and subjec. All the samples were stained immunohistochemically with anti-IMP3. Results: All the samples showed nuclear and cytoplasmic expression for IMP3. Conclusions: They can be a valuable diagnostic and prognostic marker in breast cancer treatment

1. Introduction

Breast cancer is the most common tumor globally and according to the latest Iraqi cancer registry it ranks as the first cancer among Iraqi female with a percentage 34.08% of the total female top ten cancers with the highest mortality rate (22. 58%).Notably, breast carcinoma represents the highest incidence rate among cancers in both genders. [1, 2].
Ductal carcinoma is one of the breast cancer morphology that arise from the lining cells of the milk ducts [3]. Invasive ductal carcinoma or infiltrating ductal carcinoma (IDC), comprises the 79.01 % of breast cancers in Iraq [1].
IMP3 which is the abbreviation of Insulin-like growth factor II mRNA-binding protein 3 is one of Ribonucleoprotein family that have vital roles during early stages of embryonic development in cell growth and migration, RNA stabilization and trafficking. [4-8].
Several authors study the IMP3 expression in different tumor tissues and them researches revealed different outcomes. [9], moreover this oncoprotein is also expressed in benign tissues [10].
In current retrospective paper, we studied the IMP3 expression in the breast invasive ductal carcinoma .

2. Materials and Methods

This retrospective study involved around 25 formalin fixed embedded-paraffin blocks from the archives of different private and governmental laboratories in Baghdad after histopathological diagnostic confirmation with IDC breast carcinoma.
The semi-automated microtome was used first for slide sectioning at thickness 4-5 µm) then the sectioned tissued floated on the water bath at 50°C transferred onto a Superfrost Plus slides to prepared for immunohistochemistry (IHC) staining.
The IHC were done using Anti IMP3 antibody were used (ABCAM company UK) to detect the expression in the breast cancer cells following the staining procedure used by Al-Bassam et al. [2].
The expression with more than >10% with IMP3 staining was considered positive with a moderate to strong staining intensity.

3. Results

The mean age of the study group was 45.75 years in which the patients were less than 50 years (56%) (figure 1) and vast majority of the them with grade 2 (68%) (figure 2).

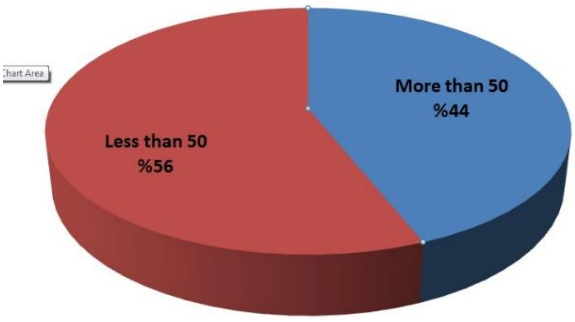

Figure 1: Age distribution of the samples

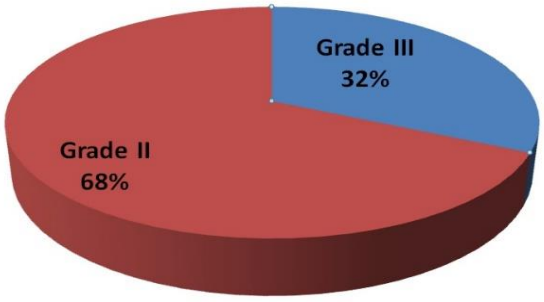

Figure 2: Grade distribution of samples

In the studied group, 100% the samples showed positive staining of IMP3 which is showed nuclear and cytoplasmic localization as illustrated in figures 3,4,5.

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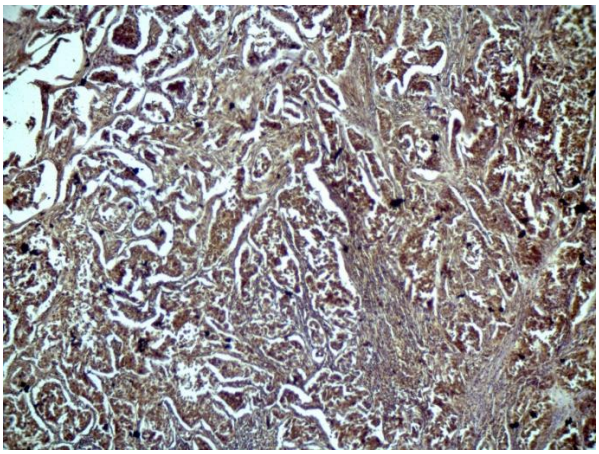

Figure 3: Immunohistochemstry positive expression of IMP3 results in cervical cancer cancer (10x). The DAB produce (Brown) signal, Harris Hematoxylin (the counter stain) produce (purple) color.

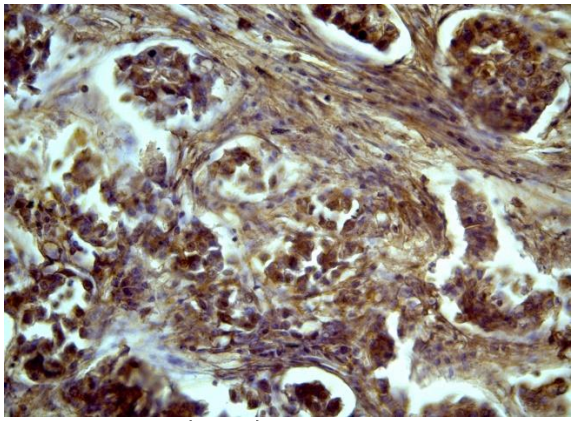

Figure 4: Immunohistochemstry positive expression of IMP3 results in cervical cancer cancer (40x). The DAB produce (Brown) signal, Harris Hematoxylin (the counter stain) produce (purple) color.

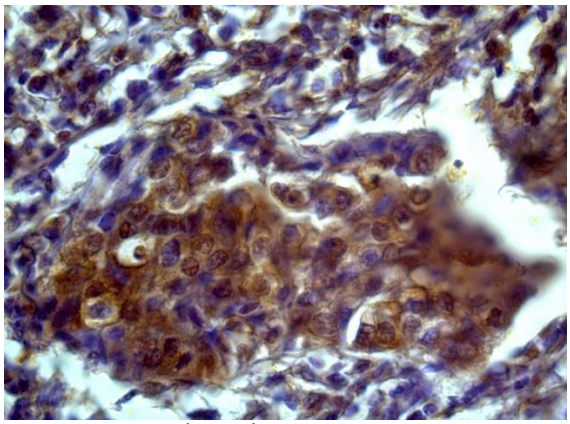

Figure 5: Immunohistochemstry positive expression of IMP3 results in cervical cancer cancer (100x). The DAB produce (Brown) signal, Harris Hematoxylin (the counter stain) produce (purple) color.

4. Discussion

Insulin-like growth factor II mRNA binding protein 3 (IMP3) is crucial oncofetal protein that plays role in cellular proliferation during oncogenesis in different cancers that developed in various organs like lung , pancrease , kidney , endocervix and cervical endometrium [11-13].

Although the IMP3 is not expressed in adults because of silencing after delivery , the reexpression is notable in different cancers strength the suggestion of its involvement in the development of malignancy and the risk of metastasis [14].

For all the above, this paper comes to highlight the role of this U3 small nucleolar ribonucleoprotein protein in Iraqi female with breast carcinoma.

In the current study all the twenty five tissues showed overexpression of this oncofetal protein (figures 3,4,5) suggesting it, role in the oncogenesis of breast cancer and this coincides with Chen et al. [9] suggesting the possibility of using this marker as prognostic factor for poor surviving and the tumor aggressiveness . however , other researchers found no correlation between IMP3 expression and tumor prognosis [15, 16].

Furthermore [17] explained the role and mechanism of the IMP3 in the development of chemoresistance of breast cancer cells via regulation breast cancer resistance protein (BCRP) ,and this increased the importance the current paper findings and the need of further investigations to find of the impact of the IMP3 on the chemoresistance among Iraqi female with breast cancer especially those with triple negative breast carcinoma [17].

In summary, the IMP3 can be a valuable diagnostic parameter to detect the invasion of tumor and to prognose tumor resistance to chemotherapy which can opens the window to develop better cancer treatment approach.

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