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Research Article

Expression of Her2/neu in Histological Sections of Sudanese Serous and Mucinous Ovarian Carcinoma

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Background: HER2/neu over expression may be of some prognostic importance in advanced ovarian carcinoma; its role in early-stage disease has not been established. The current study examined the prevalence and significance of HER2/neu expression in different grades of different types of ovarian carcinoma in Sudanese patients.
Objectives: this study aimed to examine the prevalence and significance of HER2/neu over expression in different grades of different types of ovarian carcinoma in Sudanese patients.
Materials and Methods: Representative sections from formalin-fixed paraffin embedded tissue blocks were taken from 40 blocks collected from TOTAL LABCARE and POLICE hospital in Khartoum state in Sudan. Her2/neu immunohistochemistry were done on 40 samples of patient with ovarian carcinoma.
Results: Immunohistochemical staining performed in the total number of 40 cases, 20 cases were mucinous ovarian carcinoma, and 20 cases were serous ovarian carcinoma, the result showed that positive staining of her2/neu in 3 cases of mucinous and negative staining in 17 cases 85% of the mucinous carcinoma, and also showed positive staining in one case of serous carcinoma and negative staining in 19 cases 95%.
Conclusion: According to these finding we conclude that the frequency of overexpression and amplification of her2/neu is poor in types and grades of Sudanese ovarian carcinoma

Key words: Ovarian Cancer, her2/neu Sudan

INTRODUCTION

Ovarian cancer is one of the most common gynecological malignancy that with high mortality and pose a serious threat to women health [1,2]. The disease comprise a heterogeneous group of neoplasm, the four most common subtypes being serous, endometrioid, clear cell and mucinous. (3)

Serous tumors the most frequent of the ovarian tumor are usually encountered between ages 30 and 40 years. Although they may be solid, they are usually cystic , so they are commonly known as cystadenomas or cystadenocarcinoma About 60% are benign .15% of malignant potential .and 25%malignant combined borderline and malignant lesion are the most common malignant ovarian tumor and account for about 60% of ovarian cancer.

Mucinous tumors are in most respects analogous to the serous tumor ,differing essentially in that the epithelium consists of mucin -secreting cell similar to those of the endocervical mucosa ,these tumors occur in patient in the same age range as those with serous tumor ,but mucinous lesion are considerable less likely to be malignant accounting for about 10% of all ovarian cancer.[4]

The primary genetic alterations associated with epithelial ovarian cancer, which accounts for 90% of ovarian cancer, remain to be identified [5].

Her2 /neu is member of epidermal growth factor.[6] it is oncoprotein located in human chromosomes17 encoded a 185-kda transmembrane receptor with tyrosine kinase activity[7,8]over expression or amplification in breast cancer, and ovarian cancer has become important factors in guiding management.

In the present article we set out to examine the frequency and significance of her2/neu over expression in different grades types of mucinous and serous ovarian carcinoma in Sudanese patients.

Materials and Methods:

The study comprised 40 ovarian cancer cases registered in the histopathology department of Lab Care and Police

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Hospitals, in Khartoum, Sudan, during the period 2013–2014.

Haematoxylin and eosin stained sections from all the cases were reviewed by the authors to confirm the diagnosis and the different histopathological prognostic parameters as histological type, tumor grade, and extranodal extension.

Representative sections from formalin-fixed paraffin embedded tissue were taken from the 40 cases of ovarian cancer, and immunohistochemical stain of her2/neu was performed.

IHC stain of her2/neu:

The procedure was done as follows: section [3mm]from formalin fixed paraffin embedded tissues were cut and mounted into salinized slides [fisher-band] following deparaffanization in xylene ,slide rehydration through graded series of alcohol and steamed for antigen retrieval for Her2/neu using pt link slide . slides placed in coplin jars containing sodium citrate buffer[PH 9.0],then boiled at high temp for 10 minutes, then cool at RT.endogenouse peroxidase activity blocked with 3%hydrogen peroxidase and methanol for 10 minutes for slides, then slides incubated with 100-200ml of primary antibodies for 10 minutes at room temperature for primary antibodies and then rinsed in phosphate buffer saline for 3 minutes ,binding of antibodies detected by incubating for 20minutes with dextran labeled polymer[Dako-E.n vision TM Flex Kit],finally sections washed in three change of PBS, followed by adding 3.3diaminobenzidine tetra hydro chloride [DAB][DAKO]as chromogen to product the characteristic brown stain for the visualization of antibodies enzyme complex for up to 5minutes ,slides counterstained with hematoxylin ,for each run of staining ,positive and negative control slides prepared "the positive control slides contain the under investigation and the negative of primary antibodies – each slides evaluated with investigators then the result confirmed by two consultant Histopathologists.

Statistical analysis:

Gross tabulation was used during the statistical analysis and chi-square test was assessed to correlate between tumor grade and her2/neu over expression.

Ethical clearance:

Permission was taken from the ethical committee of the faculty of medical laboratory science- AL-Neelain University, Sudan to perform this work.

Results:

The study was retrospective study performed at Histopathology department at TOTAL LABCARE and Police Hospital in Khartoum during the period from 2013 to 2014. 40 cases of ovarian cancer were included in this study with mean age of 41 years old. Twenty (20) cases were mucinous carcinoma 50%, and twenty (20) cases were serous carcinoma 50%.Figure (1)

Immunohistochemical staining performed in the total number of 40 cases, 20 cases were mucinous ovarian carcinoma, and 20 cases were serous ovarian carcinoma, the result showed that positive staining of her2/neu in 3 cases of mucinous and negative staining in 17 cases 85% of the mucinous carcinoma, and also the result showed positive staining in one case of serous carcinoma and negative staining in 19 cases 95% .table (1) and table (2)

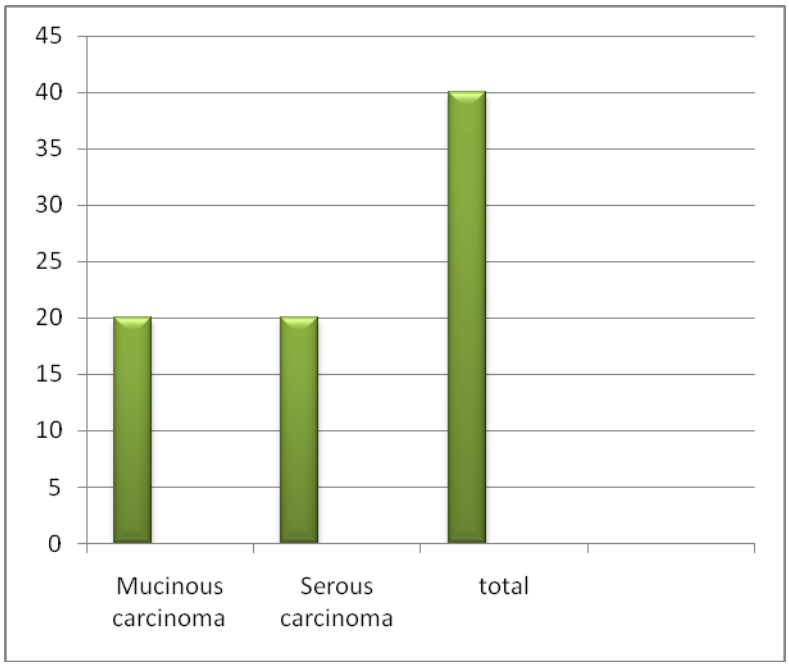
Table 1: shows the Her2/neu positive and negative in mucinous ovarian carcinoma.

	frequency	Percent
positive	3	15.5
negative	17	85.5
Total	20	100.0

Table 2: shows the Her2/neu positive and negative in serous ovarian carcinoma.

	frequency	percent
positive	1	5.0
negative	19	95.0
Total	20	100.0

Figure 1: shows percentage and numbers of ovarian carcinoma types in the study



Discussion:

The human epithelial growth factor receptor 2 (HER2) is one of the main mediators of key pathways involved in breast and other tumors carcinogenesis, invasive behavior and cell growth. Many important signal pathways such as the PI3K pathway, AKT and Rac1/ERK pathway, and RAF (RAF)/ MEK/ERK-signaling all consists of major effectors of the HER2 activity.[9]

The current study used an immunohistochemical approach to detect and determine the expression of HER2/neu in paraffin embedded sections of Sudanese Ovarian carcinoma, and the positivity of the immunohistochemistry is poorly detected and Her-2/neu gene amplification was detected in serous carcinoma one case (5%) and negative 19 cases (95%) and for mucinous carcinoma 3 cases(15%) and negative case 17 (85%). which consistent with study done by Yun Wu et al [10]their study found that her2/neu is poorly detected in serous carcinoma. Also our study support the finding found by Anne Fajac et al. ([11] in which their study showed no correlation between her2 gene amplification and protein expression with any clinic-pathological parameters of ovarian carcinoma.

In contrast our finding is against the finding detected by Estrid V. S. Høgdall et al, [12]) in which their result indicated high over expression of her2/neu in ovarian carcinoma.

But as Sudanese population are diverse and heterogeneous genetically and cultural, and cancer research in Sudan still in its infancy, and due to lack of cancer registry all these factors mad this findings is still limited and need for further studies and confirmations.

Conclusion:

According to these finding we conclude that the frequency of overexpression and amplification of her2/neu is poor in types and grades of Sudanese ovarian carcinoma.

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