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медичний університет", м. ЧернівціIMMUNOHISTOCHEMICAL FEATURES OF
EXPRESSION VIMENTIN IN THE
STRUCTURE OF THE TISSUE AROUND
THE TUMOUR OF DUCTAL BREAST
CARCINOMA**Key words:** ductal breast carcinoma,
expression of vimentin, tissue around
the tumour.**Abstract.** The article is based on the results of immunohistochemical study of the tissue around the breast tumours. We determined the expression of vimentin in the areas surrounding the tumour node of the ductal breast carcinoma. The changes in tissue structures that indicate the relationship between fabrics were identified.**Introduction**

The first place among all cancers in women ranks ductal breast carcinoma (DBC). These data are the same with those in Ukraine and in the world as a whole. Ductal breast carcinoma occurs in about 80% of all cases of breast carcinoma [1, 4, 5]. To study the processes that occur changing the normal gland structures of the tumour we should take into account the processes that have been developed not only in the tumour site. Such processes as invasion, tumour growth, metastasis cause changes in surrounding tumour tissues [1, 2, 6]. Changes in tumour sites more studied and described in the literature than transformation in the region around the tumour tissue. This is due to the difficulty assessing a large number of cellular structures and their characteristics in individual histopathological processes. There is no need to take into account changes in the area around the tumour for histological verification of the diagnosis. To verify the diagnosis is enough to know the shape, size and location of tumour cells relative to anatomical structures [1, 3, 7]. However, understanding the mechanisms of invasion and metastasis closely connected with the restructuring of the surrounding structures of the tumour. This will allow to predict the behaviour of the tumour, lymph metastasis and blood vessels [4, 5, 9].

Many scientific papers partly explain the mechanisms of invasion and tumour transformation. But in the modern scientific literature is quite rare to find information relating researches of changes tissue around the tumour. Not fully investigated the role tissue around the tumour and impact of the surrounding tissues on invasion, and processes that promote metastasis [2, 8]. To study the transformation processes in tissue around the tumour is widely used immunohistochemical detection methods, including expression of vimentin [3, 4, 6].

In recent years, the definition of the expression of vimentin gained great value as a marker of morphological changes in cells. [1, 5, 8]. Vimentin - a protein that is expressed in normal cells of mesenchymal

origin. It belongs to the cytoplasmic proteins of intermediate filaments, which form part of the cytoskeleton. Normally, vimentin is determined by immunohistochemical studies in the mesenchymal and epithelial tumour cells carcinomas, lymphomas, sarcomas. Intracellular localization of vimentin varies in tumours with varying degrees of malignancy. Increased expression of vimentin is observed in various epithelial tumours. This shows the transformation of epithelial tissue, whereby the tumour acquires different properties: rapid growth, capacity for invasion, neoangiogenesis, metastasis and poor prognosis in tumour resistance to treatment [1-4].

The purpose of the study

Identify features of vimentin expression in structures of the tissue around the tumour (vessels, lipocytes, cells of leukocyte infiltration) of ductal breast carcinoma by the immunohistochemical method.

Materials and methods

Research was done on the bases of the Department of Pathological Anatomy Bukovinian State Medical University (Chernivtsi) and pathological-anatomical department of Chernivtsi Regional Clinical Oncology Center (CHOKOD, Chernivtsi). There were selected histological preparations of 40 patients diagnosed with invasive ductal breast carcinoma for immunohistochemical study. Verify the diagnosis performed at the Chernivtsi Clinical Oncology Centre in pathological-anatomical department. The operational and biopsy material directed at pathological-anatomical department for histological examination was studied. Immunohistochemical study was performed after verification of malignant breast tumour. To evaluate the expression of vimentin was selected tissue, which clearly defined line between healthy and tumour-altered breast tissue. Of particular interest for immunohistochemical study was material obtained by express diagnosis. This tissue has the least morphological changes arising from exposure of extraneous factors. Result of research is the most trustworthy.

Immediately tissue fixation was performed in buffered 10% formalin and dehydration in ascending alcohol battery. Fixed material was turned in paraffin blocks. 5-7 micron sections were prepared and fixed on special subject lenses. Next following the standard protocol DAKO performed immunohistochemical studies of vimentin in cells.

The results of the study

Vessels of the tissue around the tumour were characterized by a strong positive reaction to vimentin (Fig. 1). In microvasculature vessels positive reaction to vimentin is observed in endothelial cells and the outer wall. In the wall of the artery the inner layer of endotheliocytes painted in brown. In various places of the tissue around the tumour visually defined clusters vimentin-positive cells that resemble the structure of endothelial cells, which may indicate

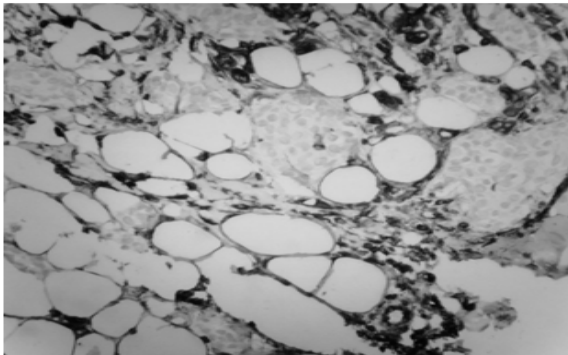


Fig. 1. Breast ductal carcinoma. Tissue around the tumour. There are vessels with bright brown staining in all layers of the cell walls in places where vimentin-positive lipocytes existing.

Immunohistochemical technique for vimentin.
Ob.20 \times . Oc.10 \times .

tumours vascular component.

The expression of vimentin in lipocytes expressed in the cell wall. Vimentin expression of lipocytes relative to tumour site varies (Fig. 2). The intensity of colour chromogen cell wall of lipocytes divided into 4 types: type I - lipocytes in the wall, where the exp-

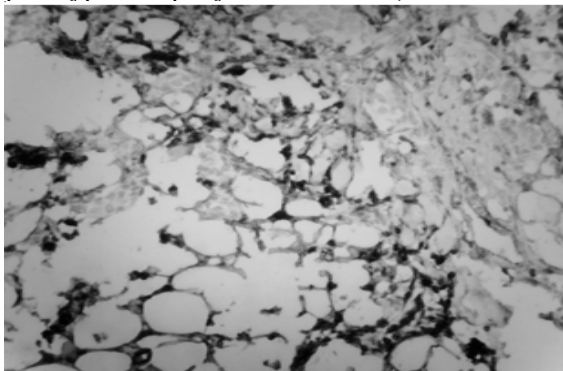


Fig. 2. Breast ductal carcinoma. Tissue around the tumour. The accumulation of vimentin-positive lipocytes with different versions of expression.

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ression of vimentin is negative. They are isolated in the tumour stroma and have no direct contact with tumour cells; II type - lipocytes with little colored walls, are located in direct contact groups and tumour cells. III type - wall colour intensity corresponds to the second, but the available areas in the form of single granules of rich brown colour; Type IV is characterized by the accumulation of rich brown granules on the cell wall of lipocytes. The accumulation of these granules is marked on the outside and inside of the cell membrane. Type IV cells located mainly on the periphery of the tumour site (perynodulyarno). The groups of lipocytes divided into normal cell wall (type A) and thickened cell wall (type B).

Clusters of rounded cells characterize lymphoid infiltration in the area around the tumour. The expression of vimentin in these cells is heterogeneous (Fig. 3). Part of vimentin-positive cells is $40 \pm 3,1\%$. Vi-

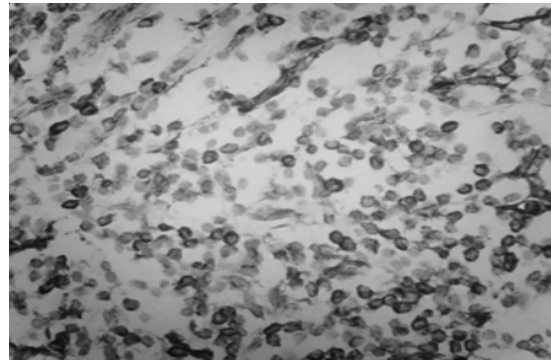


Fig. 3. Breast ductal carcinoma. Tissue around the tumour. The accumulation of lymphoid cells with varying degrees of expression.

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vimentin-positive cells show inhomogeneity. Conventionally, there are three main types of vimentin localization in cells. Type A - cells are characterized by expression of vimentin mostly on the periphery of the nucleus; type B - cells diffusely stained; type C - vimentin-negative cells. The intensity of colour (vimentin expression) of lipocytes divided into 4 types. Cells of I type colored with hematoxylin-eosin and have no brown colour, expression of vimentin is negative (0 points), type II - on a background of blue nuclei is observed brown shade cell wall - a slight expression of vimentin (1 point), the third type - the color of the cell wall is brown - expressed vimentin expression (2 points), IV type - cell wall is reddish-brown (3 points).

Conclusion

Immunohistochemical expression of vimentin in the area around the tumour of the ductal breast carcinoma observed in the cells of the microvasculature vessels (mostly- in the endothelial cells), lipocytes and lymphoid cells in places of lymphoid infiltration, it is

characterized by varying intensity. Except varying degrees of expression lipocytes are clearly differentiate four basic types of expression of vimentin.

Prospects for further research

Use of the data for predicting metastasis of carcinoma.

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ВИМЕНТИН В СТРУКТУРАХ ПЕРИТУМОРОЗНОЇ ЗОНИ ПРОТОКОВОГО РАКУ ГРУДНОЇ ЗАЛОЗИ: ОСОБЛИВОСТІ ІМУНОГІСТОХІМІЧНОЇ ЕКСПРЕСІЇ

О.В. Лазарук, І.С. Давиденко

Резюме. Стаття базується на результатах імуногістохімічного дослідження перитуморозної зони пухлини грудної залози. Визначали експресію віментину в ділянках, які оточують пухлинний вузол протокової карциноми грудної залози. Виявлені зміни в тканинних структурах, що свідчать про взаємозв'язок між тканинами.

Ключові слова: карцинома грудної залози, експресія віментину, перитуморозна зона.

ВИМЕНТИН В СТРУКТУРАХ ПЕРИТУМОРОЗНОЇ ЗОНИ ПРОТОКОВ РАКА МОЛОЧНОЇ ЖЕЛЕЗИ: ОСОБЕННОСТИ ИМУНОГИСТОХИМИЧЕСКИ ЭКСПРЕССИИ

А.В. Лазарук, И.С. Давиденко

Резюме. Статья базируется на результатах иммуногистохимического исследования перитуморозной зоны опухоли грудной железы. Определяли экспрессию виментина в участках, окружающих опухолевый узел протоковой карциномы грудной железы. Выявленные изменения в тканевых структурах, свидетельствуют о взаимосвязи между тканями.

Ключевые слова: карцинома молочной железы, экспрессия виментина, перитуморозная зона.

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