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## INTERNAL DISEASES

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### Case report: Diabetic mastopathy

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Diabetic mastopathy (DMP) is a rare fibrotic disease of the mammary gland (less than 1% among benign diseases). It was first described in 1984 by Soler & Khardori in women who have suffered from type 1 diabetes mellitus for a long time. Clinically, DMP can manifest as single or double-sided, palpable, movable, painless seals. Often, DMP is a random finding in a mammographic examination of asymptomatic patients. At the same time, radiological signs are more often non-specific. When ultrasound examination of the mammary gland with DMP can be visualized hypoechoic formations with fuzzy, uneven contours, heterogeneous structure. Clinical, ultrasound and radiological manifestations of DMP are often associated by specialists with malignancy, which leads to unnecessary invasive procedures. In this regard, of interest is the clinical case of DMP in a woman of reproductive age with type 1 diabetes, repeated trepanobiopsy of the breast. The described clinical observation represents the case of repeated invasive intervention, which proves the connection between the long-term decompensation of type 1 diabetes that occurred in the juvenile age and the progression of the pathological process in the mammary glands under hyperglycemia.

*Keywords:* diabetic mastopathy, type 1 diabetes mellitus, breast cancer.

Diabetic mastopathy (DMP) is a rare fibrotic breast disease, the frequency of which is less than 1% among benign organ lesions [1–3]. Was first described in 1984 godu Soler & Khardori [4] in women who have for a long time suffered from type 1 diabetes mellitus (DM) [2; 3; 5–9]. More recent studies [10; 11] have found that DMP is also associated with type 2 diabetes. In most cases, patients with diabetes have DMP complications (retinopathy, nephropathy or polyneuropathy) [12]. It is believed that the development of the disease is most likely in patients with a debut DM in juvenile age and prolonged hyperglycemia.

Clinically, the DMP is often manifested in the form of single or double sided movable palpable, painless seals [1]. Often DMP is a random finding on mammography screening in asymptomatic patients. In this case, radiographic signs often are nonspecific (mammary gland with heterogeneous density, asymmetrical).

An ultrasound breast study with DMP can be visualized hypoechoic formation with indistinct, irregular contours, inhomogeneous structure [3; 13; 14], which often mimics a malignant tumor.

Histological examination of breast tissue during the DMP is represented as keloidny fibrosis, lymphocytic and lobulita duktita, lymphocytic vasculitis the presence of epithelioid fibroblasts and lymphocytic infiltration predominant stromal breast B cells [5; 15].

Thus, the clinical and radiographic manifestations DMP specialists often associated with malignancy, which leads to unnecessary invasive procedures.

In this regard, it is interesting clinical case of DMP in women of reproductive age with type 1 diabetes, multiple biopsy of the breast.

Patient M. 27 years since the debut of type 1 diabetes in the juvenile age and periods of prolonged hyperglycemia. Of the complications of diabetes — proliferative retinopathy (twofold laser coagulation of the retina). The menstrual cycle is not broken, menarche at 12 years of menstruation for 6 days in a 28–30, moderate, painless. There was no pregnancy history.

From history we found that within 2 years, notes the appearance of painless seals in both breasts, discharge from the nipple was not.

Ultrasound examination of mammary glands on day 7 of the menstrual cycle fat layer premamarnoy expressed slightly reduced fibroglandulyarnaya tissue echogenicity, thickness 23.7 mm. Ducts are not expanded. In both breasts were revealed formation of irregular hypoechoic, with fuzzy edges, dimensions 32 × 18 mm (right) and 39 × 16 mm (left). These areas were avascular character at Doppler study. Ultrasound examination in line with BI-RADS category 4, which was the reason for excisional biopsy both breasts. On histological examination revealed: keloidny fibrosis.

Over the next two years, the patient was no compensation for optimum control and inherent glikemichesogo diabetes metabolic disorders (HbA1C — 8.4%). After 2 years at the next ultrasound in both breasts have been re-defined hypoechoic focal masses up to 50 mm in diameter, with indistinct contours. The patient was repeatedly performed excisional biopsy which revealed lymphocytic ucts and sclerosing lobulit with nonproliferative fibrocystic changes. At the time of re-biopsy of breast HbA1C — 9%.

Ultrasound examination of mammary glands on day 7 of the menstrual cycle fat layer premamarnoy expressed slightly reduced fibroglandulyarnaya tissue echogenicity, 19.5 mm thick. Ducts are not expanded. The right breast in an upper-outer quadrant in place palpable seal — hypoechogenic extensive portion with indistinct, irregular contours, dimensions of 40 × 20 mm without duktektazii, avuskulyarny with Doppler. Type of ACR: D.

When elastography has been defined with a predominance of type 2 elastic areas of green with elements of solid blue areas mapping (Fig. 1 and Fig. 2), deformation coefficient 1.8 (benign process). Regional lymph nodes were not detected. Conclusion: BI-RADS 3.

Thus, the described clinical observation is the case of repeated invasive intervention proves communication decompensation long type 1 diabetes arising in yuvinilnom age and progression of pathological processes in the mammary glands under conditions

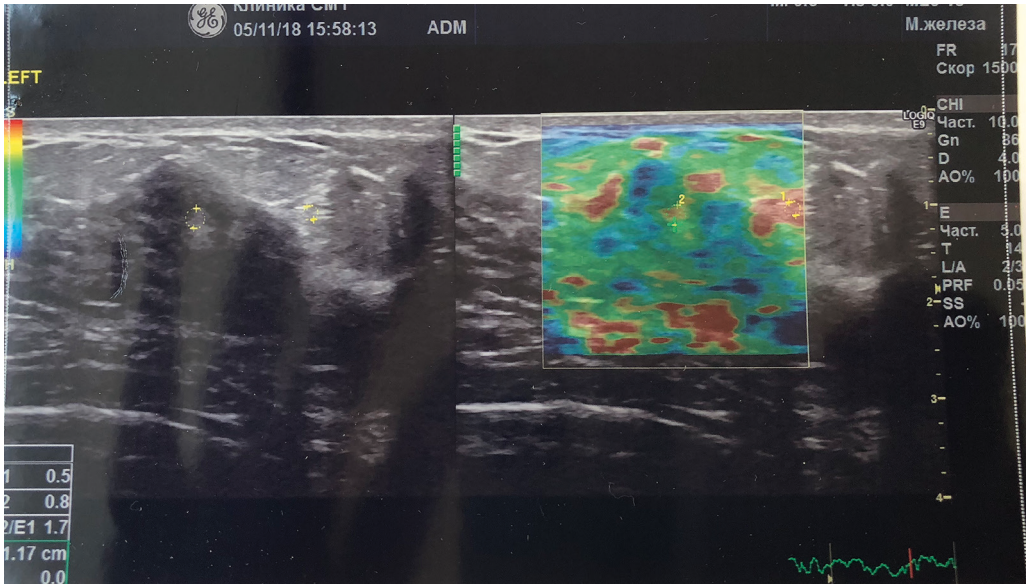


Fig. 1. Elastogram BI-RADS 3

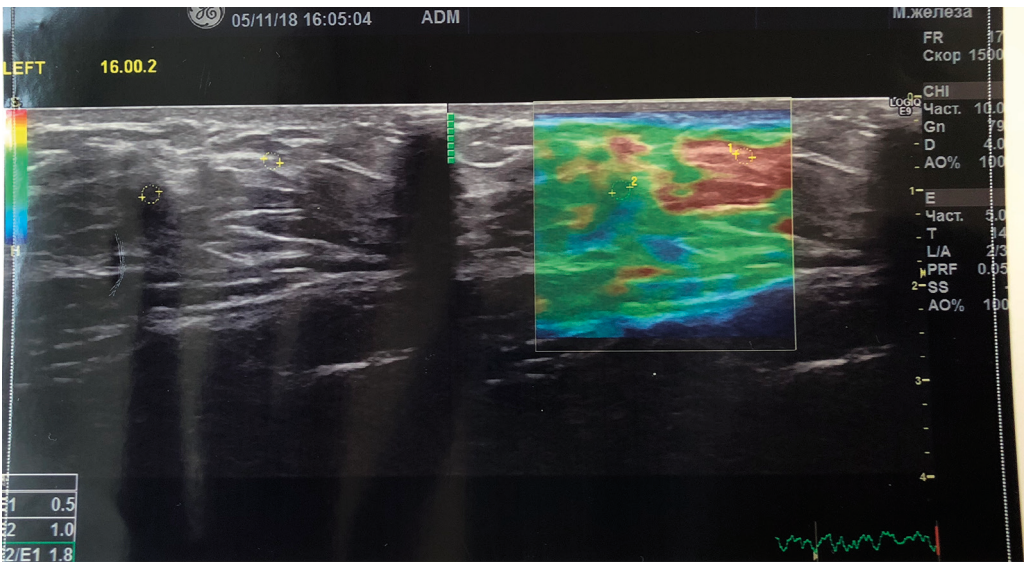


Fig. 2. Elastogram BI-RADS 3

of hyperglycaemia. It is assumed that an important role in the genesis of this disease has a prolonged hyperglycemia during decompensated diabetes [15]. Thus, the hyperglycemic state leads to excess glycosylating proteins by addition of glucose to the amino group of lysine. This process, in turn, leads to the accumulation of glycosylation end products which are capable of irreversibly binding to proteins including collagen, the latter acquires a resistance to the action of endogenous kollogenaz that provide updated fabrics and leads to loss of elasticity. An excess concentration of such complexes is ac-

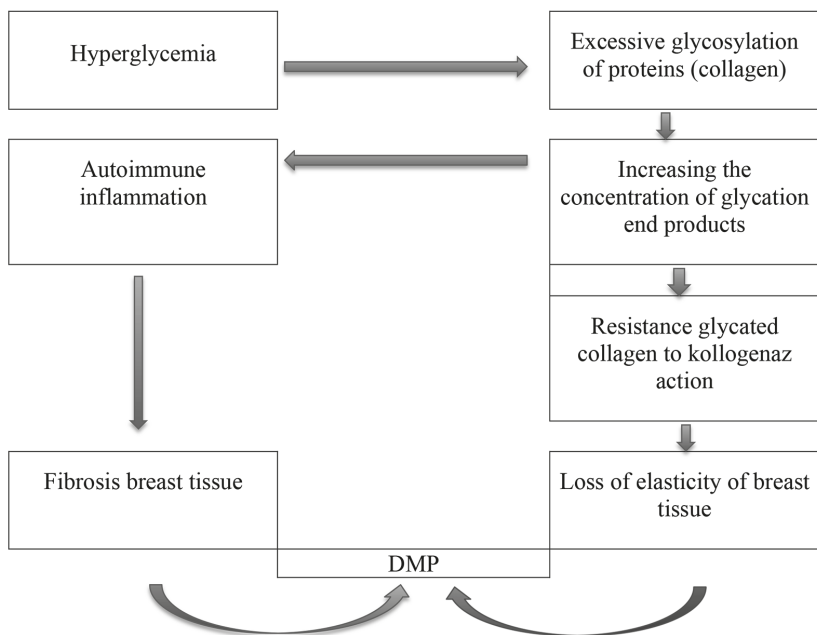


Fig. 3. The hypothesis of the pathogenesis of DMP

accompanied by increased permeability of the vessel wall, accumulation of matrix in the extravascular glycated albumin, glycated glycosylated immunoglobulins and immune complexes. The accumulation of the past are perceived by the body as a kind of “neoantigen”. This triggers a cascade of autoimmune reaction with proliferation of B cells and formation of autoantibodies. Subsequent macrophage-mediated removal of advanced glycosylation end product and can cause the release of cytokines further accumulation of extracellular matrix and collagen proliferation, which in turn leads to the formation of connective tissue [2; 3; 15] (Fig. 3).

This case also finds difficulty DMP differential diagnosis of breast cancer and, due to the uniformity of clinical and sonographic symptoms (Table). However, it is worth noting the importance of doppler in the diagnosis of DMP. It is known that in color Doppler mapping around and inside the cancer fails to identify a larger number of vessels as compared to the benign process, which may help in differential diagnosis of breast pathology.

Also in the differential diagnosis between benign and malignant formation can help sonoelastography. It is known that malignant tumors are characterized by 4 or 5 elastogram type, with a deformation ratio of 4.8, while as benign processes have a deformation coefficient less than 4.8 and the first, second or third elastotipy.

As there is no standard protocol is now for long-term monitoring of patients with DMP. Usually — the annual examination in cases where there are doubts in relation to the progression of, or change in the nature of lesions, can be performed cytological aspiration cytology or excisional biopsy. However, one should not forget that the frequency reported in the literature is 42–80% relapse within 5 years after the excisional biopsy. [6], which

happened in the illustrated clinical case. These relapses are usually bilateral and more extensive, which leads to the dilemma of the tactics of these patients [13].

*Table. Comparative characteristics of the DMP and breast cancer*

Sign	DMP	Breast cancer
type 1 diabetes mellitus	yes	yes/no
clinical:	yes	yes
tumor		
tenderness	no	no
sonographic:	hypoechoic	hypoechoic
echogenicity structure		
tumor contours	rough, fuzzy	rough, fuzzy
tumor structure	inhomogeneous	inhomogeneous
doppler	no increase vascularization	increased vascularization
sonoelastography	1, 2, 3 elastotype	4, 5 elastotype

From the above it follows that patients with type 1 diabetes which has arisen in juvenile age, with prolonged hyperglycemic states are at risk of developing DMP. There is urgency to further explore the features of this disease for timely accurate diagnosis, which can help women avoid repeated biopsies and surgeries.

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