THE POSSIBILITIES OF MODERN ULTRASOUND IN THE DIAGNOSIS OF ECTOPIC PREGNANCY OF VARIOUS LOCALIZATIONS

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Abstract. Timely diagnosis of ovarian pregnancy often allows for organ-preserving surgical treatment. In our experience, 4 of 7 cases of ovarian ulcer required only ovarian resection, preserving all reproductive organs. In the remaining 3 cases, adnexectomy was necessary due to significant necrotic changes in the adnexa due to late diagnosis and total hemorrhagic ovarian imbibition.
Keywords: ultrasound, ovarian pregnancy, ectopic pregnancy, gynecological emergencies.

Relevance. According to H.J. Choi et al. [1,6, 9,10,11,12], PU accounted for 1.59% of all cases of ovarian pregnancy, and J.S. We et al. [7] – 2.6%. The incidence of ovarian pregnancy is extremely low, accounting for 0.0025–0.015% of all pregnancies (1/7000–1/40000) and 0.4–3.0% of all types of ovarian pregnancy [1,2,3,4,5]. However, given that PU is a very rare pathology, and given the similarity of clinical manifestations in urgent situations with impaired ovarian tuberculosis, ovarian apoplexy, etc., one cannot but agree with the opinion that the true incidence of PU is somewhat underestimated [8,13,14,15]. When an ultrasound technician performs an examination of a patient with an ectopic pregnancy (EP), the woman should not leave the office without an appropriate diagnosis or at least a strong suspicion of one. This should be reflected in the examination protocol. Although there are many possible EP localizations, 95–98% of cases involve tubal pregnancy (TP), the clinical [1,16,17] and ultrasound [2,18,19] signs of which are well known, and significant diagnostic difficulties are rare. An experienced clinician, especially one working in an emergency room, will also not waste much time in making a diagnosis of TP. The situation can be quite different with rare forms of EP, particularly ulcerative colitis. In the mild, latent stage, the disease may go unrecognized due to symptoms uncharacteristic of TP, and rupture of the fetal sac can quickly lead to life-threatening hemorrhagic shock. At the same time, timely diagnosis of PUD allows for the use of a completely organ-preserving tactic – ovarian resection, without ovario- or adnexectomy [3].
The only relative risk factor for PUD recognized by most authors is the use of an intrauterine contraceptive device (IUD) [5, 10, 12, 13]. According to A. Tinelli et al. [14], 68% of women with PUD had an IUD. At the same time, H. Itoh et al. [15] note

that none of the 4 patients with PUD they examined had an IUD. However, N. Shan et al. [16] note in a recent study that, in addition to IUD, PUD can still be associated with a history of pelvic inflammatory disease. Some authors even believe that when diagnosing PU, it is sometimes fair not to take into account the presence or absence of risk factors [1,17] (let us agree that here an analogy with prenatal diagnosis of congenital malformations suggests itself).

Progressive peptic ulcer disease (PUD) is extremely rare and even less frequently described. For many years, virtually the only domestic, and perhaps even global, description of successful ultrasound diagnosis of progressive PU was by A.E. Volkov et al. (1993) [19].

We believe that, provided all of the above criteria are met, there is a guarantee of avoiding the situation of a late-detected pregnancy of unknown location. The above highlighted several key points: ultrasound diagnosis of PUD is often difficult due to the ambiguity of the ultrasound image, while timely detection of PUD is of significant clinical importance as a factor in preventing life-threatening intra-abdominal bleeding. The aim of the study was to investigate the ultrasound imaging characteristics of ovarian pregnancy.

Material and Method. Seven patients with PUD, hospitalized in the gynecology department between 2022 and 2025, were examined. The age of the patients in the study group ranged from 22 to 41 years. In two patients, serum β-hCG levels were 51 and 1,756 U/L, respectively. Two patients had positive urine pregnancy tests. In three patients, pregnancy tests were not performed due to the urgency of the situation (clinical signs of acute intra-abdominal bleeding on admission, followed by immediate laparotomy).

The examination was performed using a standard methodology and began with an examination of the abdominal cavity and pelvis using a transabdominal transducer. This was followed by a transvaginal B-mode examination to assess the location, size, and echographic characteristics of the pelvic mass. The presence and, if possible, the amount of free fluid in the pelvis and abdominal cavity were assessed. The amount of free fluid was estimated by calculating the volume of fluid accumulations in sloping areas (using the formula: $L1 \times L2 \times L3 \times 0.52$) and then summing them, or by subjective assessment. Then, using color and power Doppler ultrasound, a qualitative analysis of the hemodynamics of additional formations detected in the pelvis was performed. Doppler ultrasound examination of blood flow included an assessment of its presence, as well as the degree of its severity, taking into account the classification of the International Ovarian Tumor Analysis (IOTA) Group [1].

Results and discussion. Due to the very small number of patients included in this study, we considered it appropriate to provide a brief description of the main ultrasound findings and the corresponding surgical protocols for all 6 cases of peptic ulcer disease (PU) in which preoperative ultrasound examination was performed.

A retrospective analysis of the ultrasound findings allowed us to identify 4 types of PU ultrasound images: 1) visualization of the gestational sac with the embryo (case 1), 2) a wide echogenic ring (cases 2, 3), 3) a formation of a heterogeneous echostructure without differentiation of its components (hematoma) (case 4), 4) a conglomerate of a differentiated ovary and an adjacent formation of a heterogeneous echostructure (the ultrasound image of secondary PU) (cases 5, 6). It should be emphasized that in all cases of PU, the ultrasound diagnosticians concluded that there was a possibility of a secondary PU. In four of the six cases, the diagnosis of ectopic pregnancy was tentative, while in two cases, the ultrasound diagnosis of ectopic pregnancy was definitive. However, only in one of the six (17%) cases was the possibility of ulcerative colitis (PU) suggested. In the remaining five cases, PU was not suspected.

Based on our seven observations of PU, we believe it is possible to draw the following conclusions about the clinical and diagnostic features of PU, allowing for a more confident diagnosis of this insidious variant of ectopic pregnancy. Clinical and laboratory features of peptic ulcer: 1) delay of menstruation for 1–7 weeks, 2) scanty bloody discharge (according to our data in 43% of cases), 3) aching pain in the lower abdomen for 2–8 weeks (according to our data in 57% of cases), 4) acute onset with development of clinical manifestations of massive intra-abdominal bleeding within a few hours or 1–2 days (according to our data in 29% of cases), 5) β-hCG level in blood serum ≥1,000 mIU/ml. Features of ultrasound imaging of the pelvic organs in case of ulcerative colitis: 1) lack of visualization of the fertilized egg in the uterus, 2) detection of free fluid in the pelvis (from a “pocket” of 2–3 ml to a large amount in case of massive internal bleeding), 3) lack of visualization of the ovary on the side of the ulcerative colitis or visualization of an enlarged ovary on the side of the ulcerative colitis, which has a significantly heterogeneous echostructure, while other additional formations on the side of the altered ovary are not detected.

Conclusion. Timely diagnosis of peptic ulcer disease (PUD) often allows for organ-preserving surgical treatment. In our experience, 4 out of 7 cases of PU were treated with ovarian resection alone, preserving all reproductive organs. In the remaining 3 cases, adnexectomy was necessary due to significant necrotic changes in the adnexa due to late diagnosis and total hemorrhagic ovarian imbibition.

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