IJCNP, Volume 2, Issue 5, 2024 ISSN: 2995-536X
https://medicaljournals.eu/index.php/IJCNP

INTERNATIONAL JOURNAL OF COGNITIVE NEUROSCIENCE AND PSYCHOLOGY

MODERN DIAGNOSIS OF OVARIAN CANCER

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Abstract: In this regard, improving diagnostic methods and the algorithm for examining women to detect early ovarian cancer is one of the priority areas of clinical oncology.

Key words: cancer antigen,human chorionic gonadotropin, lactogen, and pregnancy glycoprotein.

These are 3 methods of primary diagnosis: clinical examination, radiation imaging methods (ultrasound, CT and MRI research methods) and immunological method (determining the level of tumor markers in blood serum) [6, 7]. The first and extremely important step is the clinical examination. It allows you to determine the condition of the genital organs in general and the presence of an ovarian tumor in particular [8, 9]. During a clinical examination, it is important to study the obstetric and gynecological history and cancer in the family. At the stage of clinical examination, the success of diagnosing ovarian cancer depends on the oncological alertness and theoretical preparedness of not only obstetricians-gynecologists, but also general practitioners. It is known that ovarian cancer most often occurs during peri- and postmenopause. Complaintsin older and older patients with ovarian cancer, they often overlap with complaints characteristic of other intercurrent diseases [8–11].In this regard, when a woman consults a general practitioner regarding gastroenterological, cardiological, nephrological and other diseases, an examination by a gynecologist or an ultrasound scan of the abdominal organs, including the pelvis, is appropriate [8, 9]. Successful diagnosis of ovarian cancer also depends on a physical examination of the patient with palpation of the cervical, supraclavicular and subclavian, axillary and inguinal lymph nodes, mammary glands, chest and abdomen, and auscultation of the lungs. In 7-16% of cases, ovarian cancer is manifested by symptoms such as shortness of breath and/or functional disorders of the cardiovascular system, in 60% of cases - ascites. In some cases (5-7%), ovarian cancer is diagnosed during examination of the patient due to enlargement of the cervical or supraclavicular and/or subclavian lymph nodes. Microscopic examination of punctate or biopsy specimens of lymph nodes reveals metastases [2-5, 8-11].Ovarian cancer is characterized by a practically asymptomatic course in the initial stages of development. The frequency of incidental findings of ovarian cancer during a routine examination by a gynecologist or ultrasound of the abdominal organs in the absence of any complaints is 2.6-15% of cases. Our studies of 168 patients with stage I-II epithelial ovarian tumors (93 serous, 50 endometrioid, 25 mucinous adenocarcinoma) showed that in all patients with endometrioid and in 96% of patients with mucinous ovarian adenocarcinoma, the disease manifested itself with various symptoms. At the same time, almost a quarter (22.6%) of patients with serousOvarian cystadenocarcinoma was discovered accidentally, in the absence of any complaints from the patients [10, 11]. In some cases (3–7%), ovarian cancer is diagnosed only by microscopic examinationso-

called ovarian cysts in general medical institutions [3, 4]. Thus, an important place in cancer diagnosis. The ovaries are occupied by oncological alertness of doctors of various specialties. The second component in diagnosing ovarian cancer is radiation research methods. Exactly these research methods make it possible to determine the size and nature of the tumor, its relationship with neighboring organs and the presence of additional pathological changes in the pelvis and abdominal cavity, and lymph nodes of the retroperitoneal space [6, 12—15]. Ultrasound is the leading method for diagnosing tumors in the pelvis. This method has high resolution and allows you to determine the location, size and nature of the tumor. The information content of ultrasound is 87% [13-15]. At the same time, transvaginal echography using acoustic emitters [14, 15], endoultrasound examination during laparoscopy, and color Doppler mapping (CDC) have greatly increased the capabilities of the ultrasound research method. The sensitivity of the method for ovarian cancer reaches 92-100% [13-15].Leading medical centers widely use ultrasound with a three-dimensional image of the organ under study with 3D reconstruction and three-dimensional angiography [13-15]. The method allows for a detailed assessment of the vascular bed, identifying signs of neoangiogenesis, and the qualitative assessment used (compared to two-dimensional indices) allows for a general assessment of the nature of blood flow in the tumor.Along with ultrasound, one of the leading methods is radiationdiagnostics is X-ray computer(RCT) and magnetic resonance imaging (MRI) [12—14]. A new advance in computer design tomographs was the creation of “spiral” RCT. Accuracy of ovarian cancer diagnosis using computertomography is 92.3%, cystic formations

- 94.2%, benign ovarian formations colead structure - 66.7% [9-11]. MRI improves accuracydiagnostic accuracy is up to 97-98%. Complex applicationMRI with ultrasound increases the reliability of preoperative diagnosis up to 97.5% [7, 12, 13]. The development of MR spectroscopy, as well as the creation of new organotropic contrast agents [4,12] is a priority area of “molecular imaging”. X-ray examination of the chest organscells, gastrointestinal tract, and urinary system also make it possible to determine the extent of the tumor.The third leading method for diagnosing ovarian cancer is an immunological blood test, determining the level of tumor markers in the blood serum. The ability of tumors to synthesize embryonic proteins and specific antigens has become the subject of intensive experimental research.

It is known that tumors of different histogenesis produce different antigens. For example, alpha-fetoprotein, carcinoembryonic antigen, and lactate dehydrogenase are produced by liver cancer cells and ovarian germ cell tumors. Increased levels of oncoplacental antigens, such as human chorionic gonadotropin, lactogen, and pregnancy glycoprotein, are observed in trophoblastic tumors of the uterus and nonepithelial ovarian tumors. Increased content of tumor antigens CA-199 - in colon cancer, CA-153 - in breast cancer, etc. [3-5, 16-19]. To identify ovarian cancer, a highly sensitive laboratory test is to determine the level of specific tumor antigen (cancer antigen) CA-125 in the blood serum. The expression of this antigen is also observed in healthy women, amounting to 35.91 ± 6.25 IU per 1 ml of blood serum. Exceeding the level of 35 IU/ml is a strong argument in favor of a malignant ovarian tumor. For ovarian cancerthe level of CA-125 can vary from 35 to several thousand IU/ml depending on the stage of the disease and the histological structure of the tumor [2–5]. Changes in CA-125 levels in women of reproductive age are not always pathognomonic for ovarian cancer. An increase in CA-125 has also been described in other diseases, such as tuberculosis, pneumonia, pancreatitis, endometriosis, uterine fibroids, menstruation and pregnancy. In these cases, the concentration of CA-125 ranges from 35-150 IU/ml. In this regard, in some cases there is a need to conduct additional research. Increased levelmarker during the postmenopausal period is more likely to be associated with malignant epithelial ovarian tumors. In these women, cancer is confirmed in 90% of cases [2-5, 20].In addition to existing markers, in recent years a new marker of malignant epithelial ovarian tumors has been introduced into clinical practice [21–25]. Human epidermal protein 4 (HE4) was first isolated from epithelial cells of the distal epididymis. It belongs to the family of proteinase inhibitors and is an acidic glycoprotein with a molecular weight of 25 kDa with four disulfide bonds. The biological function of HE4 is unknown. It is believed to have antiproteinase activity, although the target of the proteinase is unknown; in normal

epididymis it is involved in sperm maturation and also has antimicrobial and anti-inflammatory activity [21–25]. HE4 is normally expressed by epithelial cells of the reproductive system, upper respiratory tract and pancreas. This protein is also produced in patients with benign tumors of the ovaries and uterus, and with endometriosis [21-25]. Increased production of this protein has been detected in ovarian and endometrial cancer, and less commonly in the common form of lung adenocarcinoma. A case-control study comparing serum HE4 protein concentrations in patients with ovarian cancer, those with benign tumors, and healthy women showed that the sensitivity of HE4 for detecting ovarian cancer was 67% and the specificity was 96%. Upon further study, HE4 levels were found to be most sensitive in the early stages of ovarian cancer. Moreover, international multicenter trials have established that the likelihood of having a malignant ovarian tumor can be determined with maximum accuracy by studying the level of HE4 together with CA-125. For the first time, Moore et al. [23, 24] developed and proposed a model for calculating the degree of probability of ovarian cancer, i.e., the risk of having ovarian cancer - ROMA (Risk of Ovarian Malignancy Algorithm) in women with ovarian masses depending on the concentrations of CA-125 and HE4 in blood serum and reproductive status.Preliminary studies have shown that ROMAmay become an important part of ovarian cancer screening anddifferential diagnosis of ovarian tumors. Thus, the main methods for diagnosing ovarian cancer are clinical examination, radiation and immunological research methods. The algorithm for examining patients with newly diagnosed mass formations of the pelvic organs according to the recommendations of the Society of Oncologists (SGO) and the American College of Obstetricians and Gynecologists (ACOG) depends on the reproductive function and age of the woman [6] and, with rare exceptions, the diagnosis of ovarian cancer is possible. In controversial cases, when the above research methods do not allow an accurate diagnosis to be established and the clinical and laboratory data obtained are insufficient or contradictory, an important method for diagnosing ovarian tumors is laparoscopy. Laparoscopy allows for a thorough examination of the abdominal organs, pelvis, visceral and parietal peritoneum, and retroperitoneal lymph nodes. During this procedure, it is necessary to take swabs or evacuate free fluid for cytological examination, if necessary, perform multiple biopsies of the parietal peritoneum, lymph nodes, greater omentum and, finally, perform a tumor biopsy or oophorectomy with urgent histological examination.When a benign tumor is identified, the specified volume of surgery for a young woman becomes adequate and allows preserving fertility, avoiding laparotomy and possible complications. If an urgent histological examination reveals a malignant tumor, the scope of the operation is expanded. Thus, together with standard methods of screening for ovarian cancer, new diagnostic methods will be able to improve its early and differential diagnosis. In particular, the method for determining the concentration of HE4 will make it possible to more thoroughly study its diagnostic value both as an independent marker of ovarian cancer and in combination with CA-125, to determine the diagnostic value depending on the stage and histological structure of the tumor, to study its value in monitoring patients after primary combined treatment.

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