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Precancerous Markers in the Development of Ovarian Endometrioma

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Abstract: The article contains fragments of a scientific study aimed at developing prognostic criteria for uterine leiomyoma, the authors studied cancer markers in women of reproductive age. Early diagnosis of uterine leiomyoma contributes to effective conservative and organ-preserving treatment of this disease.

Keywords: uterine leiomyoma, immunity, women of reproductive age, cancer markers.

Introduction. Tumor markers are substances of a protein nature that can be found in the blood or urine of people with a cancer predisposition. Tumor cells secrete tumor markers into the blood from the moment the neoplasm develops, which determines the diagnosis of the disease even at the preclinical stage[1]. The values of tumor markers can be used to judge both the presence of a tumor process and the effect of treatment. Also, the dynamic monitoring of tumor markers allows you to determine the very beginning of the recurrence of the disease [2].

To date, it has been established that immunohistochemical expression of CA 125 is a late event in the carcinogenesis of adenocarcinomas of the digestive tract. Preoperative serum determination of CA 19-9 (carbohydrate antigen 19-9), CEA and CA 125 can be used as an independent prognostic factor for 5-year relapse-free survival [3].

When investigating the possibility of using carbohydrate antigen CA 19-9, carbohydrate antigen CA 15-3, carbohydrate antigen CA 125 and alpha-fetoprotein-AFP for the detection of gastrointestinal cancer, it was found that markers associated with the type of tumor were elevated in certain types cancer and well differentiated cancer and benign neoplasms, with greater accuracy in colorectal cancer [4].

Purpose of the study. To assess the prognostic significance of tumor markers in uterine leiomyoma in women of reproductive age.

Materials and methods. 120 women of reproductive age with uterine leiomyoma hospitalized in the gynecology department were examined on the basis of the Bukhara Regional Perinatal Center. The control group consisted of 30 healthy women of reproductive age[5]. The content of oncomarkers in blood serum (CA-125; CA-15-3; CA-19.9; AFP; CEA) was studied by enzyme immunoassay using the Vector-Best test systems with a set of reagents A-8768, Russian Federation, Novosibirsk[6].

Results and its discussion. To confirm the diagnosis, all women were also studied indicators of tumor markers in the blood. As a result, a statistically significant increase in the studied blood cancer markers was obtained: CA-125 was increased by 6.26 times, CA-15-3 marker was increased by 2.53 times, CA-19.9 marker was increased by 3.75 times against control values ($P<0.05$ - 0.001) (Table 1).

Table 1. Indicators of oncological blood markers in uterine leiomyoma

Index	Control group	Experimental group
CA-125	3,19±0,06	19,99±1,83*
CA-15-3	7,01±0,40	17,69±0,30***
CA19,9	3,23±1.14	12,10±0,38*
AFP	0	13,68±0,90
CEA	0	6,66±0,64

Note: * Values are significant in relation to the control group (P<0.05 - 0.001)

It is now known that the tumor marker CA 125 (Carbohydrate antigen 125) is considered a tumor marker for ovarian cancer. Normally, its concentration is 4.0-8.8×109/l (0-30 IU/ml). With an increase in the rate above 35 U / ml, ovarian cancer is detected in 90% of cases. Elevated levels of CA 125, more than 30 IU / ml may indicate malignant diseases such as cancer of the female genital organs (ovaries - in most cases, less often endometrial cancer (the inner layer of the uterus), fallopian tubes, cancer of the respiratory organs (less specific) and organs gastrointestinal tract, pancreas.

In more rare cases, CA 125 is found in non-oncological processes, for example, with endometriosis, excessive growth of the inner layer of the uterus develops; with adenomyosis, the germination of the inner layer of the uterus into the muscle tissue is noted; during menstruation and during pregnancy; with inflammation of the female genital organs; inflammatory diseases of the liver.

Given the above, it is important to determine CA-125 in combination with other tumor markers. There are scientifically proven facts that the oncomarker CA-15-3 (mucin-like glycoprotein or carbohydrate antigen 15-3 refers to oncomarkers of neoplastic (tumor) processes that occur in the mammary gland. Its normal values are 9.2-38 U/l , in some laboratories - 0-22 IU/ml.

The reason for its name as a tumor marker of breast cancer is the fact that in 80% of cases of breast cancer in women that has metastasized, this tumor marker is increased.

There is evidence that the CA 15-3 indicator may rise with benign neoplasms and inflammatory diseases of the mammary glands; cirrhotic hepatic processes; as a physiological "splash" in the 2nd half of pregnancy and in some autoimmune processes.

Oncomarker CA 19-9 is a carbohydrate antigen 19-9 (CA 19-9), which is used for early diagnosis of neoplasms of the gastrointestinal tract. The most informative analysis for tumors of the pancreas. The specificity in this case is high and amounts to 82%. With tumor problems of the biliary system and liver, it is specific in 72% of cases. Its normal values are 0-37 U / ml. Concentrations of 40 IU/ml and above are considered dangerous.

Oncomarker CA 19-9 allows you to determine: malignant processes of the gastrointestinal tract (cancer of the stomach, intestines); cancer of the liver, gallbladder and bile ducts; cancer of the female genital organs and mammary glands; bladder cancer.

Among the processes of a non-tumor nature, CA 19-9 increases in the case of: inflammatory changes and cirrhotic processes in liver diseases; diseases of the biliary tract and gallbladder (cholecystitis, cholangitis, cholelithiasis); cystic fibrosis (damage to the glands of external secretion and breathing problems).

Therefore, the results of the study of tumor markers in uterine leiomyoma in women show the presence of other concomitant diseases, in particular gastrointestinal diseases, obesity and disharmony.

For precise differentiation in oncopathology, alpha-fetoprotein (AFP) and carcinomaembryonic antigens (CEA) have also been studied. A trend towards an increase in AFP- up to 13.68±0.90 ng/ml and CEA- up to 6.66±0.64 ng/ml in the patients of the examined group was revealed. The obtained indicators served as the basis for the diagnosis of uterine leiomyoma.

It is known that AFP, a tumor marker, is a glycoprotein in chemical structure and is similar to albumin. Norm: up to 10 ng / ml, (8 IU / ml), content above 10 IU / ml - an indicator of pathology. Referring to the literature data, the determination of serum tumor markers can be used in the dynamic monitoring of patients. The combined use of CEA and other tumor markers may be useful for determining the prognosis in terms of metastasis, postoperative complications, and the combined determination of CEA and CA 19-9 can be used for early detection of cancer, AFP should be considered as a potential marker of tumor activity and a predictor of survival.

Carcinoembryonic antigen (CEA) or ANTIGEN CD66E is a non-specific marker. It is produced by the developing cells of the digestive tract of the fetus. In adults, it is determined in minimal amounts, normally up to 5 ng / ml (according to some sources - up to 6.3 ng / ml). According to the literature, there is a slight increase in SEA in smokers. At a SEA level above 20 ng / ml, a malignant tumor of the gastrointestinal tract (stomach, large intestine, rectum), a malignant process of the mammary gland, neoplasms of the prostate, the reproductive system of men and women, the thyroid gland, metastatic processes in the liver should be suspected and bone structures.

If the SEA level is up to 10 ng/ml, then there is a possibility that the patient has pathological processes in the liver (inflammation, cirrhosis), intestinal polyps, Crohn's disease, pancreatic diseases, tuberculosis, pneumonia (pneumonia), cystic fibrosis and/or postoperative metastatic process.

The study of cytokines in the blood serum of patients of the examined groups revealed an increase in the level of IL-6 by 4.6 times, a 7-fold increase in TNFa, an increase in the concentration of TGF-β2 in the blood by 117.7 times, an increase in VEGF by 2.95 times, a decrease in the level IGF, increased FGF levels.

The result obtained allows us to conclude that, with uterine leiomyoma, there is a high increase in the concentration of growth factors that regulate the processes of angiogenesis and hematopoiesis. At the same time, against the background of a decrease in the protective reparative processes of restoration of the vascular wall, there is a high risk of stimulating the growth and proliferation of leiomyoma cells. And so, all the data obtained show the state of dysregulation of the synthesis, release and transformation of cytokines and protein growth factors in uterine leiomyoma.

Tumor markers in the blood were increased, while CA-125 was increased by 6.26 times, CA-15-3 marker was increased by 2.53 times, CA-19.9 marker was increased by 3.75 times. For leiomyoma, the appearance of AFP and CEA markers in the blood was also established, which confirms the diagnosis of leiomyoma in the women of the examined group.

Conclusion Thus, uterine leiomyoma is characterized by: relative lymphocytopenia, absolute neutrophilic leukocytosis, increased basophils and ESR against the background of a decrease in the absolute number of eosinophils and monocytes in peripheral blood. And also there is a decrease in AST, an increase in the level of total bilirubin. At the same time, a significant increase in the level of urea, a decrease in creatinine and total blood protein in patients of the survey group were also established. The results obtained confirm the violation of the urea cycle, which is clinically manifested by symptoms of renal pathology, which is paraclinically ascertained by hypoproteinemia and uremia. In this case, hypoproteinemia indicates an increase in the process of catabolism of blood proteins and as an outcome of bleeding, characteristic of the tumor process. The coagulogram parameters revealed a significant decrease in PTI with a tendency to hyperfibrinogenemia against the background of discoagulation with a risk of developing DIC.

Thus, for an accurate diagnosis, it is very important to take into account concomitant diseases and conditions, the pathogenetic mechanism of which allows the causative factor to be revealed, as well as to predict the recurrence and metastasis of the oncological process.

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