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The Effect of Appendicular Peritonitis on the Reproductive Function of Girls

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ABSTRACT

After surgery for gangrenous - perforated appendicitis, miscarriage occurs in 11%, infertility in 62% of cases. The aim of the study was to develop an algorithm for the diagnosis and treatment of reproductive dysfunction in women who underwent common appendicular peritonitis in childhood. 154 girls aged 3 to 15 years were examined. The results showed that various pathologies from the reproductive system (ovarian failure, inflammatory processes, tubal peritoneal infertility) were diagnosed in 47 (30,5%) patients, while more than half of them 28 (59,6%) did not show any complaints and pathology was identified during the examination. The developed algorithm allows for timely diagnosis and treatment of complications of reproductive function in girls after suffering from diffuse appendicular peritonitis.

KEYWORDS: girls, diffuse appendicular peritonitis, reproductive function

INTRODUCTION

It is known that genital and extragenital diseases suffered in childhood are a predisposing factor for the development of many types of gynecological diseases of an adult woman. An essential role among the causes of female infertility (20%) is played by acute and chronic inflammation of the genitals, in particular the fallopian tubes. In about 40-85% of cases, the cause of this is the so-called tubal-peritoneal factor, which developed after an acute and chronic inflammatory process of the uterine appendages, previous operations in the pelvic region and adjacent abdominal organs. Tubal-peritoneal factor is primarily associated with inflammatory changes, the formation of adhesions in the pelvic cavity, accompanied by impaired patency and functional consistency of the fallopian tubes. And even after surgical elimination of the adhesive process in the peritubar space and restoration of patency of the fallopian tubes, pregnancy occurs only in 30% of cases. The reason for this is a relapse of spike formation, which, according to various authors, ranges from 80 to 90%.

Acute peritonitis is one of the most severe complications of diseases of the abdominal cavity. The first place among the causes of acute peritonitis is occupied by acute destructive appendicitis. At the same time, in girls, the pelvic organs – the uterus and its appendages - are involved in the pathological process. The increase in the incidence of appendicitis statistically coincides with the second phase of puberty, when sensitivity to pathological influences is high in all parts of the reproductive system, which further aggravates the problem.

Due to inflammation of the internal genitals, menstrual function disorders also occur. At the same time, the central link of the regulation of the menstrual cycle is rarely included in the pathological process. Disorders in the formation of the menstrual cycle in puberty girls (irregular menstruation, hypomenstrual syndrome, secondary amenorrhea) occur more often after catarrhal appendicitis (83%), and after gangrenous, gangrenous-perforative somewhat less often (70%). The analysis of gynecological morbidity of women who underwent appendectomy in childhood showed the presence of chronic adnexitis (17.7%), menstrual dysfunction (39%), primary infertility (25.4%), complicated pregnancy (33.7%), and childbirth (30.6%), which is significantly higher than in the population. After surgery for gangrenous-perforated appendicitis, miscarriage occurs in 11%, infertility – in 62% of cases.

OBJECTIVE

To analyze the reproductive function and develop an algorithm for the diagnosis and treatment of girls who have suffered widespread appendicular peritonitis in childhood.

MATERIAL AND METHODS

154 girls with widespread appendicular peritonitis treated in the 2nd clinic of the Samarkand State Medical Institute over the past 15 years aged from 3 to 15 years were examined. Intraoperatively, 3 (1.9%) were diagnosed with phlegmonous, 19 (12.4%) – gangrenous and 74 (85.7%) - gangrenous-perforated appendicitis. According to the prevalence of peritonitis, they were distributed as follows: diffuse peritonitis was detected in 82 (53.2%), common in 72 (46.8%) patients. After discharge, the patients were discharged home in a satisfactory condition and were under medical supervision. All of them underwent a complex of clinical, laboratory and instrumental examination in order to diagnose common appendicular peritonitis suffered in childhood and included: thorough collection of anamnestic data, analysis of menstrual and generative function, bimanual examination, colposcopy, microbiological examination of contents from the cervical canal and vagina, polymerase chain reaction to detect sexually transmitted diseases, assessment of the functional state of the ovaries, examination of the sexual partner, hormonal examination, ultrasound examination (ultrasound) of the pelvic and thyroid organs, examination of the mammary glands.

RESULTS AND THEIR DISCUSSIONS

The conducted research allowed us to propose the following algorithm of examination and treatment.

It is recommended to study the function of the hypothalamic-pituitary-ovarian system in girls who have had peritonitis after the end of puberty (16-18 years) or immediately in the absence of menstruation (primary amenorrhea) at the age of 14-16 years. Timely diagnosis and correction of hormonal imbalance at a young age is the key to successful treatment of this disorder.

Functional diagnostic test - colpocytology. The characteristics of smears are determined according to the recommendations proposed by Krupko-Bolshova Yu.A. et al.

There are the following cytological types, or reactions:

I. The smear consists of basal (atrophic) cells and leukocytes. The reaction characterizes a sharp insufficiency of estrogenic hormones.

II. Basal and intermediate cells and leukocytes with a predominance of basal cells and leukocytes in the smear. The cytological picture is characteristic of significant estrogenic insufficiency.

III. Intermediate cells predominate in the smear and single parabasal cells occur. The reaction is characteristic of moderate estrogenic insufficiency.

IV. The smear consists of keratinizing cells, basal cells and leukocytes are absent. The reaction is typical for a sufficient estrogenic saturation of the body.

During a normal cycle, type III smear is detected in the proliferation phase, and types III or IV are detected during the period of ovulation.

For the purpose of cytological diagnosis of reproductive function disorders, a method is used to calculate and determine the percentage of surface cells of the squamous epithelium with pycnotic nuclei to the total number of surface cells of the squamous epithelium with pycnotic nuclei to the total number of surface cells – the caryopycnotic index, as well as the eosinophilic index, which is the percentage of all mature detached surface cells with eosinophilic cytoplasm coloration to mature surface cells with basophilic cytoplasm coloration.

The level of the eosinophilic index undergoes cyclical changes. At the beginning of the cycle, the lowest value is noted – 10%, then its level gradually increases, reaching a maximum of 73% on day 14. After that, it gradually decreases and on the 28th day has the lowest value - 4-6%. In healthy girls at the beginning of the menstrual cycle, in the follicular phase, surface cells increase to 60-80% with a parallel increase in the karyopycnotic index to 70%. This pattern is observed for 2-5 days. Later, in the luteal phase of the menstrual cycle, the percentage of surface cells and the karyopycnotic index decrease, the cells of the intermediate layers predominate and parabasal cells appear – up to 8-10%. In the third phase, cell rejection occurs.

Along with epithelial cells, non-epithelial cells and structures are normally detected in colpocytological smears. These include Dederlein sticks, leukocytes, erythrocytes, mucus. The predominance of Dederlein sticks in the smear and a small number of white blood cells indicates the absence of inflammatory processes. The number of leukocytes and erythrocytes varies according to the phases of the menstrual cycle.

In pathological conditions associated mainly with inflammatory processes, various saprophytes, coccal flora, fungi of the genus Candida, etc. can be determined. To study the microflora and determine the degree of purity of the vaginal flora in smears, the color of smears by Gram or Romanovsky-Giemse is used, with examination under a microscope.

Basal (rectal) temperature measurement - the test is based on the hyperthermic effect of progesterone on the thermoregulatory center of the hypothalamus. In the ovulatory cycle, the temperature curve has two phases. In the follicular phase, the basal temperature does not exceed 370C, decreases slightly before ovulation (by 0.2-0.30 C) and then quickly (within 1-2 days) rises above 370C. The difference in basal temperature in the follicular and luteal phases is 0.4-0.60 C. Normally, the duration of the hyperthermic (luteal) phase is at least 9 days and no more than 14 days. On the eve of menstruation, there is a drop in basal temperature below 370C.

Ovarian insufficiency. This is a form of endocrine disorder that occurs as a result of primary damage to the ovaries, the absence of the follicular apparatus and an adequate response to gonadotropin stimulation. Damage to the follicle receptor apparatus (especially the FSH receptor)

due to peritonitis leads to a lack of response to endogenous gonadotropin emissions, cessation of follicle growth, anovulation, and hypoestrogenism, which, according to the feedback principle, causes increased secretion of pituitary gonadotropins. Typical complaints of menstrual dysfunction by type of oligoamenorrhea.

Diagnosis of ovarian insufficiency is based on the data of hormonal research: determination of FSH – high levels (more than 20 IU / L), progesterone test negative, cyclic hormone test positive, determination of estrogens in the blood – hypoestrogenism (less than 100 mmol / L). Additionally recommended: Ultrasound of the pelvic organs. There is uterine hypoplasia, thin endometrium, ovarian hypoplasia. Lipidogram and bone mineral density study – for timely prevention of systemic disorders associated with estrogen deficiency.

When diagnosing ovarian insufficiency, the patient is shown treatment in a specialized department of gynecological endocrinology.

Tubal-peritoneal infertility. The peritoneal form of infertility includes infertility due to the presence of peritubar adhesions with patency of one or both fallopian tubes and the absence of other factors leading to a violation of reproductive function in women. Tubal infertility often occurs as a result of secondary damage to the fallopian tubes, with various inflammatory processes of the abdominal organs, in particular, with appendicitis, especially perforating. In 18% of cases, the cause of tubal infertility is surgery on the pelvic organs.

The exclusion of this complication should be carried out in the absence of pregnancy during the first year of regular sexual life without the use of contraceptives and in the presence of normal spermogram indicators in the sexual partner.

This type of infertility is caused by morpho-functional disorders of the patency of the fallopian tubes due to the formation of connective tissue junctions between the visceral and parietal peritoneum of the pelvis after peritonitis.

With a pronounced adhesive process in the small pelvis, patients may be disturbed by: periodic pain in the lower abdomen, dysmenorrhea, intestinal dysfunction, dyspareunia.

Diagnosis of tubal-peritoneal infertility is based on data from the following examination methods:

Laparoscopy is transabdominal or transvaginal. This is the most accurate method of diagnosing tubal-peritoneal infertility, which allows you to visually assess the condition of the pelvic organs, the patency of the fallopian tubes, the degree of spread of the adhesive process in the pelvis, to identify additional concomitant pathology of the pelvic organs.

As an isolated causal factor of infertility, peritubar adhesions are detected during laparoscopy in 13.7% of patients who have been treated for infertility for a long time and unsuccessfully. As a concomitant factor in chronic salpingitis, the frequency of detection of peritoneal factor increases to 38.2%. The peritoneal factor causes a violation of reproductive function due to changes in the anatomical ratios of the fimbrial sections of the fallopian tubes and ovaries, as a result of which the conditions for capturing the egg by the fimbriae of the tube from the surface of the ovary are violated. Seagulls often accompany pelvic inflammatory diseases. Thus, among cases of inflammatory diseases of the genitals without signs of endometriosis, 85.3% of patients had adhesions and only 14.7% had no adhesionso.

It has been established that the frequency of anatomical changes in the fallopian tubes and infertility is directly dependent on the severity of the inflammatory process and can range from 6 to 30%, whereas pelvic peritoneum damage occurs much more often and is detected during repeated laparoscopy in 63% of patients. At the same time, a violation of the patency of the fallopian tubes was noted only in 40% of women with peritubar adhesions. These data indicate that the fallopian tubes have better mechanisms of protection against the damaging effects of infection than the pelvic peritoneum. Laparoscopy allows simultaneous removal of concomitant pathological changes: coagulate foci of endometriosis, dissect adhesions, perform salpingoovariolysis and salpingostomy according to indications. Depending on the condition of the fallopian tubes, the severity and localization of adhesions, there are 4 degrees of prevalence of the adhesive process:

Grade I – minimal adhesions, planar, vascular-free. The fallopian tubes are passable, the folding of the mucous membrane of the fallopian tubes is preserved.

Grade II – adhesions are thin, vascular-free or malovascularized, more than 50% of the ovary is free of adhesions. Occlusion of the distal part of the fallopian tube is possible, but the fimbrial part and the folding of the mucous membrane of the fallopian tubes are preserved.

Grade III – adhesions are dense, vascularized, less than 50% of the ovarian surface is free, occlusion of the distal part of the fallopian tube, the folding of the endosalpinx is destroyed.

Grade IV – adhesions are dense, vascularized, the surface of the ovaries is not visible due to adhesions, the fallopian tube is in the form of a sactosalpinx or hydrosalpinx, the folding of the mucous membrane of the fallopian tubes is destroyed.

If the adhesive process of the I-II degree is detected, the tubal-peritoneal factor of infertility is unlikely. Additional examination is necessary in order to identify possible functional neuroendocrine disorders in which hormonal correction is required. Step-by-step rehabilitation makes it possible to achieve pregnancy in 40-55% of patients.

With the adhesive process of the III-IV degree, the prognosis of pregnancy depends on the complex influence of many factors:

-preoperative preparation in the form of adequate sanitation of all foci of infection.

-the volume of the performed intervention, the preservation of the fimbrial sections of the fallopian tubes and their epiteal cover, the need for combined reconstructive plastic surgery.

-the course of the postoperative period. Stage-by-stage rehabilitation contributes to the onset of spontaneous pregnancy in 10-20% of patients. In this regard, if pronounced pathological changes are detected in the pelvis, patients should be recommended to use assisted reproduction methods.

-hysterosalpingography is the main method of diagnosing pathology of the uterine cavity, which allows us to characterize the condition of the mucous membrane of the fallopian tubes (folding, hydrosalpinxes, adhesions, including in the ampullary department), to make an assumption about the presence of periturbar adhesions and the nature of their spread.

-contrast hysterosalpingoscopy - performed with the introduction of a 10% glucose solution or an echovist into the uterine cavity under the control of echoscopy. The method is no less accurate than HSG in recognizing changes in the uterine cavity and fallopian tubes and has a number of advantages: safety and speed of execution, the possibility of repeated use. However, this method also has disadvantages: the introduction of fluid into the uterine cavity is carried out using a special tip, and therefore the study cannot be considered non-invasive.; the diagnosis of patency of the fallopian tubes is based only on indirect signs, the interpretation of which depends on a number of factors: the choice of the optimal scanning plane, bowel emptying, the normal position of the uterus; there is no objective documentation of the study, given that on the basis of an echogram, unlike X-rays, it is quite difficult to consult patients.

-Ultrasound of the pelvic organs allows you to identify large hydrosalpinxes. Visualization of unchanged fallopian tubes during transvaginal scanning is possible in the presence of the following conditions: the absence of an extensive adhesive process in the pelvis, a purified intestine and the presence of "free" fluid in the pelvis, which acts as a contrasting medium.

The results showed that various pathologies from the reproductive system (ovarian insufficiency, inflammatory processes, tubal-peritoneal infertility) were diagnosed in 47 (30.5%) patients, while more than half of them 28 (59.6%) did not make any complaints and the pathology was revealed during the examination.

CONCLUSION

Thus, common appendicular peritonitis is a severe surgical disease of the abdominal cavity. Patients who have suffered from widespread appendicular peritonitis in childhood should be registered with a pediatric surgeon and gynecologist. The proposed algorithm for the diagnosis and treatment of complications of common appendicular peritonitis allows for timely diagnosis and treatment of the identified pathology of the reproductive system. Despite the fact that information about the methods of examination of gynecological patients is presented in a number of manuals, we consider it appropriate to use the presented algorithm in the management tactics of patients who have undergone widespread appendicular peritonitis, and supplementing them with new information and practical recommendations.

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