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DISEASES OF THE FEMALE GENITAL TRACT AND BREAST: INFECTIONS, DEVELOPMENTAL ANOMALIES, INFLAMMATORY AND NEOPLASTIC DISORDERS

Abstract. Diseases of the female reproductive system comprise a broad group of congenital, infectious, inflammatory, hormonal and neoplastic conditions affecting the vulva, vagina, cervix, uterus, fallopian tubes, ovaries and breasts. These disorders may significantly influence reproductive health, fertility, pregnancy outcomes and overall quality of life. This review examines congenital anomalies of the female genital tract, sexually transmitted infections, pelvic inflammatory disease, endometriosis, adenomyosis, uterine fibroids, ovarian disorders and breast diseases. Particular attention is given to the clinical manifestations, diagnostic approaches and treatment principles of benign and malignant tumors of the cervix, endometrium, ovaries and breasts. The importance of early diagnosis, modern imaging and laboratory investigations, HPV vaccination and screening programs is also emphasized. An integrated and individualized approach to prevention, diagnosis and treatment is essential for improving women's health and reproductive outcomes.

Keywords: female reproductive system, female genital tract, congenital anomalies, reproductive tract infections, sexually transmitted infections, pelvic inflammatory disease, endometriosis, adenomyosis, uterine fibroids, ovarian diseases, breast cancer, HPV, diagnosis, treatment, prevention.

AYOLLAR JINSIY A’ZOLARI VA KO‘KRAK BEZI KASALLIKLARI: INFEKSIYALAR, RIVOJLANISH NUQSONLARI, YALLIG‘LANISH VA O‘SMA KASALLIKLARI

Annotatsiya. Ayollar reproduktiv tizimi kasalliklari tug‘ma, infeksion, yallig‘lanish, gormonal va o‘sma jarayonlarini o‘z ichiga olgan keng patologiyalar guruhidir. Ushbu kasalliklar vulva, qin, bachadon bo‘yni va tanasi, bachadon naychalari, tuxumdonlar hamda ko‘krak bezlarini zararlaydi. Ular ayolning reproduktiv salomatligi, fertilligi, homiladorlik kechishi va hayot sifatiga sezilarli ta’sir ko‘rsatadi. Maqolada ayollar jinsiy a’zolarining tug‘ma rivojlanish nuqsonlari, jinsiy yo‘l bilan yuqadigan infeksiyalar, kichik tos a’zolarining yallig‘lanish kasalliklari, endometrioz, adenomioz, bachadon miomasi, tuxumdon va ko‘krak bezi kasalliklari yoritilgan. Shuningdek, bachadon bo‘yni, endometriy, tuxumdon va ko‘krak bezi xavfli o‘smalarining klinik xususiyatlari, diagnostika usullari va davolash tamoyillari ko‘rib chiqilgan. Kasalliklarni erta aniqlash, zamonaviy diagnostika usullaridan foydalanish, HPVga qarshi emlash va skrining dasturlarini takomillashtirish ayollar salomatligini saqlashning muhim omillari hisoblanadi.

Kalit so'zlar: ayollar reproduktiv tizimi, jinsiy a'zolar kasalliklari, tug'ma anomaliyalar, infeksiyalar, yallig'lanish, endometrioz, adenomioz, bachadon miomasi, tuxumdon kasalliklari, ko'krak bezi saratoni, HPV, diagnostika, davolash, profilaktika.

ЗАБОЛЕВАНИЯ ЖЕНСКИХ ПОЛОВЫХ ОРГАНОВ И МОЛОЧНОЙ ЖЕЛЕЗЫ: ИНФЕКЦИИ, ПОРОКИ РАЗВИТИЯ, ВОСПАЛИТЕЛЬНЫЕ И ОПУХОЛЕВЫЕ ЗАБОЛЕВАНИЯ

Аннотация. Заболевания женской репродуктивной системы представляют собой обширную группу врождённых, инфекционных, воспалительных, гормональных и опухолевых патологий. Они поражают вульву, влагалище, шейку и тело матки, маточные трубы, яичники и молочные железы. Данные заболевания оказывают существенное влияние на репродуктивное здоровье, фертильность, течение беременности и качество жизни женщины. В статье рассматриваются врождённые аномалии развития женских половых органов, инфекции, передаваемые половым путём, воспалительные заболевания органов малого таза, эндометриоз, аденомиоз, миома матки, заболевания яичников и молочных желёз. Особое внимание уделено клиническим проявлениям, современным методам диагностики и основным принципам лечения доброкачественных и злокачественных новообразований шейки матки, эндометрия, яичников и молочной железы. Раннее выявление заболеваний, применение современных диагностических методов, вакцинация против ВПЧ и совершенствование скрининговых программ имеют важное значение для сохранения женского здоровья.

Ключевые слова: женская репродуктивная система, заболевания половых органов, врождённые аномалии, инфекции, воспалительные заболевания, эндометриоз, аденомиоз, миома матки, заболевания яичников, рак молочной железы, ВПЧ, диагностика, лечение, профилактика.

INTRODUCTION

The female reproductive system is a complex anatomical and physiological structure consisting of the external genitalia, vagina, cervix, uterus, fallopian tubes, ovaries and mammary glands. These organs are responsible for reproductive function, hormonal regulation, menstruation, pregnancy, childbirth and lactation. Therefore, diseases affecting these structures can influence not only reproductive health but also the general physical and psychological well-being of women [1,2].

Female reproductive disorders occur at different stages of life. Congenital abnormalities may become apparent during childhood or adolescence, whereas infectious and inflammatory conditions are particularly common during the reproductive years. Benign and malignant tumors occur more frequently with increasing age, although some may also affect young women.

The most clinically significant conditions include reproductive tract infections, pelvic inflammatory disease, congenital Müllerian anomalies, endometriosis, uterine fibroids, ovarian tumors and breast diseases. Cervical and breast cancers remain important public health problems worldwide [3].

The aim of this review is to summarize the main diseases of the female genital tract and breast, focusing on their etiology, clinical manifestations, diagnostic methods, treatment principles, complications and prevention.

LITERATURE REVIEW

The female reproductive system is susceptible to various pathological processes, including congenital, infectious, inflammatory and neoplastic disorders.

Congenital anomalies of the genital tract are mainly associated with abnormal development, fusion or canalization of the Müllerian ducts. These abnormalities include uterine agenesis, unicornuate uterus, bicornuate uterus, uterus didelphys and septate uterus. Depending on their anatomical characteristics, they may cause primary amenorrhea, dysmenorrhea, infertility and pregnancy complications [4–6].

Infectious diseases are among the most common gynecological conditions. Bacterial vaginosis, vulvovaginal candidiasis and trichomoniasis are frequent causes of vaginal discharge and discomfort. Sexually transmitted infections, particularly chlamydia and gonorrhea, may spread to the upper genital tract and cause pelvic inflammatory disease, tubal damage and infertility [7–13].

Inflammatory disorders include vulvitis, vaginitis, cervicitis, endometritis and salpingitis. Chronic inflammatory conditions such as endometriosis and adenomyosis are important causes of pelvic pain, abnormal uterine bleeding and reproductive dysfunction [22–25].

Neoplastic diseases are divided into benign, premalignant and malignant conditions. Common benign disorders include uterine leiomyomas, endometrial polyps, ovarian cysts and breast fibroadenomas. Malignant diseases include cervical, endometrial, ovarian, vulvar, vaginal and breast cancers. Persistent infection with high-risk human papillomavirus (HPV) is the principal cause of cervical cancer [14–19].

MATERIALS AND METHODS

This study was conducted as a narrative literature review of diseases affecting the female reproductive system and breast.

The literature review included scientific publications, medical textbooks, international clinical guidelines and recommendations from recognized healthcare organizations, including the World Health Organization (WHO), the American College of Obstetricians and Gynecologists (ACOG), the Centers for Disease Control and Prevention (CDC), the International Federation of Gynecology and Obstetrics (FIGO) and the European Society of Human Reproduction and Embryology (ESHRE).

The reviewed literature covered the following areas:

Congenital anomalies of the female genital tract.

Infectious diseases and sexually transmitted infections.

Inflammatory disorders of the reproductive organs.

Endometriosis and adenomyosis.

Benign and malignant gynecological tumors.

Ovarian and breast diseases.

Diagnostic, therapeutic and preventive approaches.

The collected information was classified according to anatomical location and pathological mechanism. Particular attention was paid to clinical manifestations, modern diagnostic methods and treatment principles. The review was structured according to the main sections of the IMRAD scientific format.

RESULTS

1. Congenital Anomalies of the Female Genital Tract

Congenital anomalies of the female genital tract develop due to abnormalities in the formation, fusion or resorption of the Müllerian ducts. The most common conditions include:

Uterine agenesis (Mayer–Rokitansky–Küster–Hauser syndrome).

Unicornuate uterus.

Bicornuate uterus.

Uterus didelphys.

Septate uterus.

Vaginal atresia and transverse vaginal septum.

Imperforate hymen.

Clinical manifestations vary depending on the type of anomaly. Some patients remain asymptomatic, while others experience primary amenorrhea, cyclic pelvic pain, dysmenorrhea, infertility and recurrent pregnancy loss.

Ultrasound, particularly three-dimensional ultrasonography, and magnetic resonance imaging (MRI) are important diagnostic methods. Treatment depends on the anatomical abnormality and clinical presentation. Surgical correction is indicated for obstructive anomalies and selected uterine malformations [4–6].

2. Infectious and Inflammatory Diseases

Infections of the female genital tract may affect both the lower and upper reproductive organs.

The most common vaginal infections include:

Bacterial vaginosis: associated with an imbalance of vaginal microbiota, causing thin grayish discharge and an unpleasant fishy odor.

Vulvovaginal candidiasis: usually caused by Candida albicans and characterized by itching, irritation, redness and thick white discharge.

Trichomoniasis: a sexually transmitted infection caused by Trichomonas vaginalis, often associated with yellow-green discharge and vaginal irritation.

Sexually transmitted infections include chlamydia, gonorrhea, syphilis, genital herpes and Mycoplasma genitalium infection. Many of these infections may be asymptomatic, which increases the risk of delayed diagnosis and complications [7–13].

Pelvic inflammatory disease (PID) is an ascending infection involving the endometrium, fallopian tubes and sometimes the ovaries and pelvic peritoneum. Its

main clinical manifestations include lower abdominal pain, abnormal vaginal discharge, fever, dyspareunia and abnormal uterine bleeding.

Possible complications include:

Tubal infertility.

Ectopic pregnancy.

Chronic pelvic pain.

Hydrosalpinx.

Tubo-ovarian abscess.

Diagnosis is based on clinical examination, microbiological testing, pregnancy testing and pelvic ultrasonography. Treatment requires timely broad-spectrum antibiotic therapy and management of sexual partners when an STI is identified [13,30,31].

3. Diseases of the Cervix

Cervical disorders include cervicitis, cervical intraepithelial neoplasia (CIN) and cervical cancer.

Persistent infection with high-risk HPV types, particularly HPV 16 and 18, is the major etiological factor in cervical cancer development. Although most HPV infections resolve spontaneously, persistent infection may cause precancerous epithelial changes.

Cervical intraepithelial neoplasia is classified into low-grade and high-grade lesions. Diagnosis includes cervical cytology, HPV testing, colposcopy and histological examination.

Treatment of precancerous lesions may involve observation in selected low-risk cases or excisional procedures such as loop electrosurgical excision and conization.

Cervical cancer commonly presents with abnormal vaginal bleeding, postcoital bleeding, pelvic pain and abnormal discharge. Treatment depends on the stage and may include surgery, radiotherapy, chemotherapy and targeted therapy.

HPV vaccination and regular cervical screening are the most effective preventive strategies [14–19].

4. Diseases of the Uterus

The uterus may be affected by inflammatory, hormonal, degenerative and neoplastic conditions.

Endometritis is inflammation of the endometrial lining, commonly occurring after childbirth, miscarriage, abortion or intrauterine procedures. Symptoms include fever, uterine tenderness, pelvic pain and abnormal discharge. Treatment generally requires appropriate antibiotic therapy.

Endometriosis is a chronic estrogen-dependent inflammatory condition characterized by endometrial-like tissue outside the uterine cavity. It commonly affects the ovaries, pelvic peritoneum and uterosacral ligaments. Typical manifestations include dysmenorrhea, chronic pelvic pain, dyspareunia and infertility. Treatment may involve hormonal therapy, analgesics and laparoscopic surgery [22–25].

Adenomyosis is characterized by the presence of endometrial glands and stroma within the myometrium. It may cause heavy menstrual bleeding, dysmenorrhea and chronic pelvic pain. Ultrasound and MRI are useful diagnostic methods.

Uterine leiomyomas (fibroids) are benign smooth-muscle tumors of the uterus. They may cause heavy menstrual bleeding, pelvic pressure, abdominal enlargement and reproductive complications. Management includes observation, medical treatment, myomectomy, uterine artery embolization or hysterectomy, depending on symptoms and reproductive plans [26,27].

Endometrial polyps and hyperplasia are additional causes of abnormal uterine bleeding. Histological examination is important when malignancy or atypical hyperplasia is suspected.

Endometrial carcinoma most frequently presents with postmenopausal bleeding. Diagnosis is established through endometrial biopsy and imaging. Treatment generally involves surgery, with radiotherapy, chemotherapy or other systemic therapies according to disease stage and tumor characteristics [28,29].

5. Diseases of the Fallopian Tubes and Ovaries

The fallopian tubes play an essential role in fertilization and embryo transport. Tubal inflammation, adhesions and obstruction may significantly reduce fertility.

Salpingitis is commonly associated with pelvic inflammatory disease. Damage to the tubal epithelium and ciliated cells may lead to tubal obstruction, ectopic pregnancy and infertility.

Ectopic pregnancy, most frequently located in the fallopian tube, is a potentially life-threatening condition requiring urgent diagnosis and appropriate treatment.

Ovarian diseases include functional cysts, endometriomas, benign tumors, polycystic ovary syndrome and malignant neoplasms.

Functional ovarian cysts commonly resolve spontaneously. However, ovarian torsion is a gynecological emergency characterized by sudden unilateral pelvic pain, nausea and vomiting. Prompt surgical assessment is necessary to preserve ovarian function.

Ovarian cancer is frequently diagnosed at an advanced stage because its early symptoms are often nonspecific. Abdominal bloating, early satiety, pelvic discomfort and urinary symptoms may be initial manifestations.

Diagnosis includes transvaginal ultrasound, MRI or CT, selected tumor markers and histopathological examination. Treatment commonly involves cytoreductive surgery and platinum-based chemotherapy, with targeted therapy in selected cases [32,33].

6. Diseases of the Breast

Breast disorders include inflammatory, benign and malignant conditions.

Mastitis is an inflammatory condition commonly associated with breastfeeding. It presents with breast pain, redness, swelling and sometimes fever. Treatment

includes continued milk removal, analgesia and antibiotics when bacterial infection is suspected. Breast abscesses may require drainage.

Fibroadenoma is one of the most common benign breast tumors, particularly among young women. It typically presents as a painless, mobile and well-defined breast mass. Ultrasound and, when indicated, core needle biopsy are used for diagnosis.

Breast cysts and fibrocystic changes are also common benign conditions. Most simple cysts require no treatment unless symptomatic.

Breast cancer is the most frequently diagnosed malignancy among women worldwide. Important risk factors include increasing age, family history, hereditary mutations, prolonged hormonal exposure, obesity after menopause and alcohol consumption.

Clinical manifestations may include:

A palpable breast mass.

Changes in breast shape or size.

Skin dimpling or retraction.

Nipple inversion.

Bloody nipple discharge.

Enlarged axillary lymph nodes.

Diagnosis is based on clinical examination, mammography, ultrasound and core needle biopsy. Histopathological and immunohistochemical investigations determine tumor type and receptor status.

Treatment may involve breast-conserving surgery, mastectomy, radiotherapy, chemotherapy, endocrine therapy and targeted treatment, depending on tumor stage and biological characteristics [3,34].

DISCUSSION

The reviewed literature demonstrates that diseases of the female reproductive system have diverse etiological and clinical characteristics. Their symptoms frequently overlap, making accurate diagnosis essential.

Congenital anomalies may remain undetected until adolescence or reproductive age. Early diagnosis is particularly important in patients with primary amenorrhea, cyclic pelvic pain and infertility.

Infectious diseases remain a major concern because untreated infections can spread to the upper reproductive tract and cause irreversible tubal damage. Therefore, timely microbiological testing, appropriate antimicrobial treatment and partner management are essential.

Chronic conditions such as endometriosis and adenomyosis require long-term individualized management. Treatment selection should consider the patient's symptoms, age, reproductive plans and disease severity.

Neoplastic disorders represent another important clinical challenge. Cervical cancer is largely preventable through HPV vaccination and screening, whereas

breast cancer outcomes are strongly influenced by early detection and appropriate treatment. Ovarian cancer remains difficult to diagnose at an early stage because of its nonspecific clinical presentation.

Modern diagnostic approaches, including ultrasonography, MRI, molecular testing, histopathology and immunohistochemistry, have improved diagnostic accuracy and treatment planning. Multidisciplinary cooperation is particularly important in managing malignant diseases.

However, unequal access to preventive healthcare, screening programs and modern treatment remains a significant problem in many countries. Improving medical education, public awareness and access to reproductive healthcare is therefore essential.

CONCLUSION

Diseases of the female genital tract and breast constitute a broad spectrum of congenital, infectious, inflammatory, benign and malignant conditions that significantly influence women's health and reproductive function.

Congenital anomalies may cause menstrual disorders, infertility and obstetric complications. Infectious and inflammatory diseases, particularly sexually transmitted infections and pelvic inflammatory disease, may result in chronic pelvic pain, tubal damage and ectopic pregnancy.

Endometriosis, adenomyosis and uterine fibroids are important causes of pelvic pain, abnormal uterine bleeding and reduced fertility. Ovarian disorders range from functional cysts to malignant tumors, while breast diseases include mastitis, fibroadenoma, cysts and breast cancer.

Early diagnosis, appropriate laboratory and imaging investigations, histopathological confirmation and individualized treatment are essential for improving clinical outcomes.

Prevention through HPV vaccination, cervical and breast cancer screening, sexual health education, early treatment of infections and regular medical examinations plays a major role in reducing disease-related complications.

In conclusion, effective management of female reproductive and breast diseases requires an integrated approach involving prevention, early detection, accurate diagnosis, modern treatment methods and multidisciplinary cooperation.

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