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**INFERTILITY IN WOMEN OF REPRODUCTIVE AGE: CLINICAL CHARACTERISTICS
AND TREATMENT EFFECTIVENESS**



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Abstract: This article analyzes the clinical course of infertility in women of reproductive age, major risk factors, modern diagnostic approaches, and treatment outcomes. The relationship between infertility and ovulatory disorders, menstrual cycle abnormalities, tubal pathology, polycystic ovary syndrome, pelvic inflammatory diseases, reduced ovarian reserve, and endometriosis was evaluated. The importance of comprehensive diagnostic assessment and individualized treatment in improving reproductive function was assessed. The findings emphasize the importance of early reproductive health assessment, timely identification of infertility causes, and selection of individualized treatment strategies.

Keywords: Infertility, reproductive age, ovulation, menstrual cycle, ovarian reserve, endometriosis, polycystic ovary syndrome, diagnosis, treatment.

**БЕСПЛОДИЕ У ЖЕНЩИН РЕПРОДУКТИВНОГО ВОЗРАСТА: КЛИНИЧЕСКИЕ
ОСОБЕННОСТИ И ЭФФЕКТИВНОСТЬ ЛЕЧЕНИЯ**

Аннотация: В статье анализируются особенности клинического течения бесплодия у женщин репродуктивного возраста, основные факторы риска, современные диагностические



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подходы и результаты лечения. Изучена взаимосвязь бесплодия с нарушениями овуляции, изменениями менструального цикла, патологией маточных труб, синдромом поликистозных яичников, воспалительными заболеваниями органов малого таза, снижением овариального резерва и эндометриозом. Оценено значение комплексной диагностики и индивидуализированного подхода к лечению для улучшения репродуктивной функции. Полученные результаты подтверждают важность ранней оценки репродуктивного здоровья, своевременного выявления причин бесплодия и выбора индивидуальной тактики лечения.

Ключевые слова: Бесплодие, репродуктивный возраст, овуляция, менструальный цикл, овариальный резерв, эндометриоз, синдром поликистозных яичников, диагностика, лечение.

REPRODUKTIV YOSHDAGI AYOLLARDA BEPUSHTLIK: KLINIK XUSUSIYATLARI VA DAVOLASH SAMARADORLIGI

Annotatsiya: Ushbu maqolada reproduktiv yoshdagi ayollarda bepushtlikning klinik kechishi, asosiy xavf omillari, diagnostik yondashuvlar va davolash natijalari tahlil qilinadi. Tadqiqotda bepushtlikning ovulyatsiya buzilishlari, hayz sikli o'zgarishlari, bachadon naylari patologiyasi, polikistoz tuxumdon sindromi, yallig'lanish kasalliklari, tuxumdon zaxirasining kamayishi va endometrioiz bilan bog'liqligi o'rganildi. Kompleks diagnostika va individual davolash yondashuvining reproduktiv funksiyani yaxshilashdagi ahamiyati baholandi. Olingan natijalar reproduktiv salomatlikni erta baholash, bepushtlik sabablarini o'z vaqtida aniqlash va individual davolash taktikasini tanlash muhimligini ko'rsatdi.

Kalit so'zlar: Bepushtlik, reproduktiv yosh, ovulyatsiya, hayz sikli, tuxumdon zaxirasi, endometrioiz, polikistoz tuxumdon sindromi, diagnostika, davolash.

Introduction

Female infertility is an important reproductive health problem, and its development is closely associated with age, functional disorders of the reproductive system, hormonal imbalance, and various gynecological conditions. In women of reproductive age, understanding the clinical course of infertility, identifying its underlying causes at an early stage, and selecting effective treatment strategies are of particular clinical importance. Ovulatory disorders, polycystic ovary syndrome, endometriosis, impaired fallopian tube patency, uterine abnormalities, and other factors may contribute to infertility during the reproductive period. The presence of several etiological factors simultaneously can influence the clinical manifestations of infertility and treatment outcomes. Therefore, comprehensive assessment of the patient's age, reproductive history, ovarian reserve, and hormonal status is essential for determining the appropriate management strategy. Modern reproductive medicine provides increasingly advanced opportunities for the diagnosis and treatment of female infertility. Ultrasonography, hormonal assessment, ovulation monitoring, evaluation of ovarian reserve, and assisted reproductive technologies allow clinicians to develop individualized treatment approaches. Treatment effectiveness can be assessed not only by achieving pregnancy but also by restoration of reproductive function and improvement of overall clinical outcomes. Studying the age-related clinical course of infertility in women of reproductive age, evaluating treatment outcomes, and identifying effective individualized approaches represent important areas of contemporary gynecology. The development of evidence-based diagnostic and therapeutic strategies may contribute to improved reproductive outcomes and quality of life among women affected by infertility.

Relevance

Female infertility remains an important reproductive health problem among women of reproductive age. Its clinical course and treatment outcomes may vary depending on age, hormonal



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status, ovarian reserve, and underlying gynecological disorders. Early identification of infertility-related factors and individualized treatment are essential for improving reproductive outcomes. Therefore, studying the clinical characteristics of infertility and evaluating treatment effectiveness in women of reproductive age is highly relevant.

Aim

To evaluate the clinical course of infertility in women of reproductive age and assess the effectiveness of modern diagnostic and treatment approaches in improving reproductive outcomes.

Main part

The clinical and demographic characteristics of reproductive-aged women with infertility were comprehensively evaluated. The age of the patients and duration of their reproductive period were taken into consideration. The duration of infertility was determined based on individual medical history. Patients were divided into groups with primary and secondary infertility. Previous pregnancies and their outcomes were analyzed as part of the reproductive history. Previous deliveries, abortions, and pregnancy losses were separately recorded. The duration, regularity, and characteristics of the menstrual cycle were assessed. The presence of ovulatory disorders was determined based on clinical findings. Previous gynecological diseases were carefully analyzed. The possible role of endometriosis in the development of infertility was evaluated. Reproductive disorders associated with polycystic ovary syndrome were also assessed. Inflammatory diseases of the pelvic organs were taken into consideration. Body weight and body mass index were measured and evaluated. The potential influence of excess body weight on reproductive function was analyzed. The main clinical risk factors associated with infertility were systematized. Changes in reproductive potential associated with increasing age were assessed. The relationship between infertility duration and clinical manifestations was analyzed. Individual clinical characteristics of the patients were compared.

The hormonal and reproductive status of the patients was comprehensively assessed using laboratory investigations. Follicle-stimulating hormone levels were determined to evaluate ovarian function. Luteinizing hormone levels were assessed to characterize the ovulatory process. Estradiol concentrations were evaluated as an indicator of ovarian functional activity. Progesterone levels were determined to assess the occurrence of ovulation. Prolactin levels were measured to identify possible hyperprolactinemia. Thyroid-stimulating hormone levels were assessed to evaluate thyroid function. Anti-Müllerian hormone levels were determined as an important marker of ovarian reserve. The relationship between hormonal parameters and reproductive age was analyzed. Ovarian reserve was additionally assessed by ultrasound examination. The number of antral follicles was determined as an indicator of reproductive potential. The ovulatory process was evaluated through dynamic monitoring during the menstrual cycle. Follicular maturation and development of the dominant follicle were assessed. Endometrial thickness and structural characteristics were evaluated. Hormonal imbalances were analyzed as possible causes of infertility. Reduced ovarian reserve was assessed from the perspective of reproductive prognosis. The influence of hormonal abnormalities on ovulatory function was determined. Laboratory findings were compared with clinical and ultrasound results. The identified abnormalities were taken into account when selecting individualized treatment strategies.

A comprehensive diagnostic examination was performed to identify the underlying causes of infertility. The clinical assessment began with detailed medical history taking and evaluation of the general condition of the patients. Gynecological examination was performed to assess the overall condition of the reproductive system. Transvaginal ultrasonography was used as one of the principal instrumental diagnostic methods. The anatomical structure of the uterus and the presence of pathological changes were evaluated. Endometrial thickness and morphological characteristics were assessed. The size, structure, and follicular apparatus of the ovaries were examined. The number of antral follicles was determined to assess ovarian reserve. Development of the dominant follicle was monitored dynamically by ultrasound. The presence and regularity of ovulation were evaluated.



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Fallopian tube patency was assessed using appropriate instrumental diagnostic methods. Pathological changes in the pelvic organs were identified. Particular attention was paid to ultrasound signs suggestive of endometriosis. Diagnostic criteria for polycystic ovary syndrome were evaluated. Hormonal investigations were analyzed together with instrumental diagnostic findings. AMH levels were used as an important parameter for assessing ovarian reserve. The diagnostic findings enabled identification of the main etiological forms of infertility. An individualized diagnostic algorithm was developed for each patient.

The treatment method was selected individually according to the identified etiological factors of infertility. The patient's age was considered one of the major criteria for determining the treatment strategy. Ovarian reserve and hormonal status were taken into account during treatment planning. An appropriate therapeutic strategy was selected for patients with ovulatory disorders. Ovulation induction methods were applied according to clinical indications. Individual hormonal correction was performed when hormonal abnormalities were identified. In patients with polycystic ovary syndrome, treatment was aimed at restoring reproductive function. A comprehensive therapeutic approach was used in cases of infertility associated with endometriosis. Individual treatment strategies were selected for patients with fallopian tube pathology. The effectiveness of surgical treatment was evaluated when anatomical abnormalities were present. Assisted reproductive technologies were considered when clinically indicated. Follicular development was monitored throughout the treatment process. Ovulation was monitored using serial ultrasound examinations. Endometrial readiness for implantation was evaluated. The response to treatment was monitored using laboratory and instrumental parameters. Therapeutic effectiveness was assessed based on clinical and reproductive outcomes. Individual risk factors were regularly reassessed during treatment. Adverse effects and treatment adherence were also taken into consideration. Treatment effectiveness was primarily evaluated according to the achievement of pregnancy.

Treatment effectiveness was evaluated using clinical, laboratory, and instrumental parameters. The degree of recovery of reproductive function after treatment was determined. The proportion of patients who achieved ovulation was assessed. Restoration of regular menstrual cycles was evaluated as an indicator of clinical effectiveness. Pregnancy achievement rates were recorded among the treated patients. The time required to achieve pregnancy was assessed individually. Reproductive outcomes were compared between different age groups. The influence of infertility duration on treatment effectiveness was analyzed. The relationship between ovarian reserve and pregnancy outcomes was evaluated. The effect of ovulatory disorders on treatment outcomes was determined. Outcomes of infertility associated with tubal factors were analyzed. Treatment effectiveness in cases of endometriosis-associated infertility was evaluated. Reproductive outcomes were assessed in patients with polycystic ovary syndrome. Changes in hormonal parameters following treatment were analyzed. Positive dynamics in ultrasound parameters were documented. The main prognostic factors influencing the achievement of pregnancy were identified. Age and ovarian reserve were considered important factors determining reproductive prognosis. The influence of treatment methods on reproductive outcomes was compared. The obtained findings demonstrated the clinical importance of individualized treatment strategies.

Results

The study included 30 women of reproductive age with infertility. The patients were aged 23 to 39 years, with the largest proportion represented by women aged 28–32 years. The duration of infertility ranged from 1 to 7 years, with most patients reporting infertility for 2–4 years. Primary infertility was diagnosed in 18 patients (60.0%), whereas secondary infertility was observed in 12 patients (40.0%). Ovulatory dysfunction was identified in 12 patients (40.0%), while menstrual cycle disorders were observed in 11 patients (36.7%). Tubal factor infertility was detected in 9 patients (30.0%), polycystic ovary syndrome in 8 patients (26.7%), pelvic inflammatory diseases in 7 patients (23.3%), reduced ovarian reserve in 6 patients (20.0%), and endometriosis in 5 patients (16.7%).



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These findings indicate that infertility in reproductive-aged women has a multifactorial clinical character, with ovulatory, menstrual, tubal, endocrine, inflammatory, and ovarian factors contributing to impaired fertility. Before treatment, regular ovulation was observed in 14 patients (46.7%), while 16 patients (53.3%) had ovulatory dysfunction. Following individualized treatment, regular ovulation was observed in 24 patients (80.0%). Regular menstrual cycles were present in 19 patients (63.3%) before treatment and increased to 27 patients (90.0%) after treatment. Adequate endometrial thickness was observed in 18 patients (60.0%) before treatment and in 25 patients (83.3%) after treatment. The mean AMH level was 1.82 ng/mL before treatment and increased to 1.91 ng/mL after treatment. Clinical improvement was observed in 26 patients (86.7%) following treatment. Pregnancy was achieved in 13 patients (43.3%) after treatment. The number of patients requiring additional treatment decreased from 17 patients (56.7%) before treatment to 7 patients (23.3%) after treatment. A favorable reproductive prognosis was observed in 13 patients (43.3%) before treatment and increased to 23 patients (76.7%) after treatment. Overall, the results demonstrate that comprehensive diagnostic assessment and individualized treatment were associated with improvement in ovulatory function, menstrual cycle regularity, endometrial characteristics, and reproductive outcomes among women with infertility.

Discussion

The findings of the present study demonstrate that female infertility in reproductive age is characterized by a multifactorial clinical profile involving ovulatory, menstrual, tubal, endocrine, inflammatory, and ovarian factors. In the studied group of 30 women, primary infertility was more frequent than secondary infertility, indicating the importance of early assessment of reproductive function in women who have not previously achieved pregnancy. Ovulatory dysfunction was identified as one of the most common clinical factors, which may be associated with menstrual irregularities and impaired follicular maturation. Polycystic ovary syndrome was also observed in a considerable proportion of patients, supporting its important role in reproductive dysfunction through disturbances of ovulation and hormonal regulation. Tubal factor infertility and previous pelvic inflammatory diseases were additional clinically significant factors, emphasizing the importance of assessing the anatomical condition and patency of the reproductive tract. Reduced ovarian reserve was identified in some patients, demonstrating the importance of assessing ovarian function and reproductive potential, particularly in women of advanced reproductive age. Endometriosis was also associated with infertility and may contribute to impaired reproductive outcomes through anatomical, inflammatory, and ovarian mechanisms.

The comparative assessment of reproductive parameters before and after treatment demonstrated positive changes in ovulatory function, menstrual cycle regularity, and endometrial characteristics. The increase in the proportion of women with regular ovulation following individualized treatment indicates the importance of selecting therapeutic strategies according to the underlying cause of infertility. Improvement in menstrual cycle regularity and endometrial characteristics may also contribute to better conditions for conception and implantation. Pregnancy was achieved in 13 of the 30 treated women, demonstrating a clinically meaningful reproductive outcome. The reduction in the number of patients requiring additional treatment further suggests improvement in the overall clinical status following individualized management. The findings support the concept that infertility should not be considered as a single disease entity but rather as a complex reproductive disorder requiring comprehensive diagnostic evaluation.

Conclusion

In conclusion, female infertility in reproductive age is a multifactorial condition associated with ovulatory disorders, menstrual irregularities, tubal factors, hormonal disturbances, reduced ovarian reserve, pelvic inflammatory diseases, and endometriosis. The study findings demonstrate that a comprehensive assessment of reproductive function is essential for identifying the underlying causes of infertility and selecting an appropriate treatment strategy. Individualized treatment was



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associated with improvement in ovulatory function, menstrual cycle regularity, endometrial characteristics, and overall reproductive status. The achievement of pregnancy in a considerable proportion of treated women indicates the clinical effectiveness of an individualized therapeutic approach. The findings also emphasize the importance of early diagnosis, timely treatment, and regular evaluation of reproductive health. Overall, an integrated diagnostic and therapeutic approach can improve reproductive function, enhance treatment outcomes, and increase the probability of pregnancy among women of reproductive age with infertility.

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