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Disorders of Sexual Development in Men

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Abstract:

Hypogonadism syndrome in men is a clinical and laboratory syndrome caused by a decrease in testosterone secretion by the testes. Depending on the level of damage to the hypothalamic-pituitary-gonadal system, there are two main forms of hypogonadism: hypergonadotropic, or primary hypogonadism, and hypogonadotropic, or secondary hypogonadism, the clinical picture, diagnosis and treatment of which are presented in this clinical lecture.

Keywords: hypogonadism, testosterone, hypergonadotropic hypogonadism, hypogonadotropic hypogonadism, treatment.

Introduction. Hypogonadism syndrome in men is a clinical and laboratory syndrome caused by decreased secretion of testosterone by the testes. Depending on the level of damage to the hypothalamic-pituitary-gonadal system, two main forms of hypogonadism are distinguished: hypergonadotropic, or primary hypogonadism, and hypogonadotropic, or secondary hypogonadism. Hypergonadotropic hypogonadism in men is caused by a decrease or complete absence of the androgen-secreting function of the testicles, due to their damage by the pathological process; hypogonadotropic hypogonadism - a decrease or complete loss of gonadotropic stimulation of the testicles. Both forms of hypogonadism can be either congenital or acquired and develop before and after puberty. The main causes of congenital, prepubertal primary hypogonadism are chromosomal abnormalities (Klinefelter syndrome), anorchidism, late treated cryptorchidism, and acquired ones are trauma, radiation, chemotherapy for cancer, as well as other toxic lesions of the testicles. Secondary hypogonadism is congenital in Kallmann syndrome (anosmia combined with lack of gonadotropin production) and the "fertile eunuch" syndrome (isolated LH deficiency), while

acquired in cases of tumors of the pituitary gland and hypothalamus, as a result of their surgical treatment or radiation therapy, hemorrhages in the tumor. Prepubertal hypogonadism is characterized by high growth (with preserved secretion of somatotropic hormone) or dwarfism (with deficiency of somatotropic hormone), eunuchoid body proportions - long limbs, shortened torso, poorly developed skeletal muscles, female-type fat distribution, true gynecomastia, pallor of the skin, lack of hair on the pubis, armpits, high timbre of voice, length of the penis up to 5 cm, the scrotum is atonic, unpigmented, without folds, testicular volume is less than 2 ml or their absence in the scrotum, "unawakened" libido syndrome. Post-pubertal hypogonadism is characterized by a decrease in sexual desire, a decrease and weakening of adequate and spontaneous erections, prolonged sexual intercourse, weakening of brightness or absence of orgasm, lack of ejaculation, decreased hair on the body and face, thinning hair on the head, pale skin, penis - 5 and more than cm, atonic, moderate pigmentation and folding of the scrotum, testicles more than 12 ml, soft, flabby on palpation. Along with pure forms of primary (hypergonadotropic) and secondary (hypogonadotropic) hypogonadism, their combination is often found - mixed hypogonadism, which develops in various pathological conditions: liver diseases, kidneys, exogenous intoxications, but most often this form of hypogonadism occurs in obesity (metabolic syndrome), diabetes mellitus and in older men (age-related hypogonadism). This form of hypogonadism is characterized by a decrease in the number of Leydig cells, their sensitivity to gonadotropins,a decrease in the speed of blood flow in the testicles (a component of primary hypogonadism) and hypothalamic-pituitary depletion, a decrease in the amplitude and frequency of LH surges with disruption of negative feedback (a component of secondary hypogonadism). In addition, patients experience an increase in the concentration of sex hormone binding globulin, resulting in a decrease in free, biologically active testosterone, which further worsens the course of hypogonadism. Moreover, in cases of the development of obesity, another negative factor is added to the pathogenesis - aromatization of androgens in adipose tissue with additional suppression of the gonadotropic function of the pituitary gland by estrogen. Data on the prevalence of hypogonadism syndrome are based on the prevalence of the main causes of its development. Thus, anorchism occurs in 3–5% of boys with the absence of testicles in the scrotum. Klinefelter syndrome occurs in 1 in 500 boys, and Kallman syndrome in 1 in 5000. Age-related hypogonadism is more common - 10–15% of men aged 30 to 40 years, 15–25% of men aged 40 to 50 years and over 30 –40% of men over 50 years old. In obesity, the prevalence of hypogonadism is also very high and amounts to 25–30% in class 1 obesity, reaching 90–100% in class 3 obesity. Thus, in the Tromsø study, examining 1548 men from one region of residence aged 25–84 years, an inverse correlation, adjusted for age, was found between waist circumference and the level of total and free testosterone, and in all men whose waist circumference exceeded 102 cm , testosterone levels were below normal values. Diagnosis of hypogonadism syndrome, as a rule, does not cause difficulties. When collecting anamnesis, the condition of the genital organs at birth, the presence of injuries and/or operations is assessed. In addition, the dynamics of sexual desire, the presence of adequate and spontaneous erections, the duration of sexual intercourse, the nature of orgasm, and the presence of ejaculation are clarified. An examination of the skeletal muscles, mammary glands, skin, hair growth, and external genitalia is carried out, with the volume of the testicles measured. When interviewing a patient, it is convenient to use specially designed sexological questionnaires for the main symptoms of hypogonadism, which have good sensitivity, but, unfortunately, low specificity. Therefore, in any case, laboratory diagnostics are necessary, which includes determining the content of total testosterone (normal is more than 12 nmol/l) and gonadotropins (LH and FSH) in the blood serum. The content of these hormones is examined in blood samples obtained in the morning hours from 9 to 11 on an empty stomach. The concentration of total testosterone is less than 8 nmol/l, decreased or increased levels of gonadotropins, in combination with clear clinical symptoms, make it possible to diagnose hypogonadotropic or hypergonadotropic hypogonadism, respectively. In cases where the clinical symptoms of hypogonadism are clear and the level of total testosterone is in the range of 8–12

nmol/l,it is necessary to determine sex hormone-binding globulin with further calculation of the level of free testosterone (the norm is more than 250 mol/l). In some cases, to exclude prolactinoma in secondary hypogonadism, it is necessary to determine the level of prolactin in the blood. Carrying out an analysis of the ejaculate also gives a fairly complete picture of the androgen status and the state of gonadotropic secretion, which in most cases is necessary for prescribing therapy. When carrying out differential diagnosis of the causes of hypogonadism (trauma or tumor of the testicle, tumor of the hypothalamus and pituitary gland), ultrasound examinations and magnetic resonance imaging are performed. When diagnosing hypogonadism, a separate role is given to identifying its complications, in particular erectile dysfunction, which not only significantly reduces a man's quality of life, but also, in the presence of metabolic risk factors, is a predictor of serious cardiovascular complications. Consequently, timely identification of this disorder and pathogenetic therapy of the underlying disease will lead to a reduction in the risk of overall cardiovascular mortality in patients. In addition, erectile dysfunction can be used as an additional factor in the patient's compliance with the prescribed therapy for the underlying disease. The main goals of therapy for hypogonadism syndrome in men are the complete elimination of testosterone deficiency - restoration or development of secondary sexual characteristics, libido and potency, increasing muscle strength, treatment or prevention of osteoporosis, obesity, and restoration of fertility. In case of primary (hypergonadotropic) hypogonadism, as well as in case of irreversible secondary (hypogonadotropic) hypogonadism (in the absence of the need for reproductive rehabilitation), elimination of androgen deficiency is achieved by prescribing constant replacement therapy with testosterone preparations. Today there is a fairly wide selection of testosterone drugs. The main differences between the drugs are the features of their pharmacokinetics, as well as the spectrum of pharmacodynamic activity. Today the following drugs are presented in Russia: methyltestosterone, Andriol, testosterone esters for parenteral therapy (testosterone propionate, Omnadren-250, Sustanon-250, Nebido) and the transdermal drug Androgel. Methyltestosterone is an alkylated testosterone preparation developed for oral therapy but is currently not widely used due to hepatotoxicity. In addition, the disadvantage of the drug is the need to take it multiple times. Andriol is a fat-soluble testosterone undecanoate preparation developed for oral administration. The presence of a natural testosterone molecule makes it highly safe. The drug is devoid of hepatotoxicity. In addition, due to the peculiarities of pharmacokinetics (transport through the lymphatic system), andriol in therapeutic doses does not inhibit the endocrine function of the testicles and spermatogenesis.However, the disadvantages of the drug are its relatively weak androgenic effect, as well as repeated use. Testosterone ester preparations for parenteral therapy (Sustanon-250 and Omnadren-250) are the most common, since their composition (a combination of various testosterone esters with different half-lives) allows for a rapid and long-lasting androgen replacement effect. The usual regimen for their use is 1 ml (1 ampoule) intramuscularly once every 3 weeks. The disadvantage of these drugs is the occurrence of supraphysiological peaks in testosterone concentrations in the first few days after injection, followed by a decrease in testosterone concentrations below normal values in the last days of the dosing interval. Testosterone ester preparation for parenteral administration - Nebido (testosterone undecanoate) provides a more stable concentration of testosterone and is used by intramuscular injection approximately once every 3 months, under control of testosterone levels. Androgel is a hydroalcoholic gel containing 1% testosterone, which is applied directly to the skin daily. When used by men with hypogonadism, this transdermal delivery system restores testosterone concentrations to physiological norms. The transdermal route of testosterone administration avoids its primary metabolism in the liver and inactivation, as occurs with the use of oral androgenic drugs, and also allows simulating the circadian rhythms of the release of physiological unmodified testosterone, while a constant peak-free concentration of testosterone in plasma is observed for 24 hours. Against the background Androgen replacement therapy in patients with hypogonadism normalizes sexual function and maintains secondary sexual characteristics. Androgens prevent bone resorption and directly

stimulate its formation. The positive effects of androgens include their anabolic effect on muscles. In men with hypogonadism, treatment with androgens improves mood and general well-being. A decrease in body fat mass and cholesterol levels under the influence of androgens is another positive effect of androgen therapy. Side effects of androgen therapy include the formation of acne due to stimulation of the sebaceous glands, weight gain and the occurrence of gynecomastia, the latter effect depending on the ability of androgens to aromatize into estrogens. Androgen overdose can also cause sodium and water retention, leading to edema. An increase in hematocrit caused by androgens cannot be considered dangerous, except when androgens are administered to patients with an already elevated hematocrit (smoking, sleep apnea syndrome in obesity). Patients receiving androgen replacement therapy should undergo periodic monitoring: clinical examinations and laboratory tests. The frequency of periodic monitoring depends on the age of the patient.In younger men, these tests may be performed at annual intervals; in older men, every 3–6 months. The restoration of sexual functions can be monitored by the patient completing sexological questionnaires. Testosterone concentrations should be monitored. Since androgens stimulate the production of erythropoietin by the kidneys and also act on bone marrow stem cells, an increase in hemoglobin and hematocrit levels is observed after testosterone administration, which also needs to be monitored. At the beginning of therapy and subsequently at semi-annual intervals, monitoring of the serum lipid profile (cholesterol, HDL and LDL) and liver function (AST, ALT) is necessary. In men over 35 years of age, a digital rectal examination and determination of prostate specific antigen (PSA) levels in the blood serum should be performed once every 3–6–12 months to identify possible prostate diseases. A PSA level greater than 4 ng/ml is an absolute contraindication to androgen therapy. There is currently no evidence that androgen replacement therapy stimulates the development of benign hyperplasia or prostate cancer. However, the presence of prostate cancer and benign hyperplasia with severe bladder outlet obstruction are absolute contraindications to androgen therapy. Androgen therapy is also contraindicated for breast carcinoma in men, since this tumor, as well as prostate cancer, are androgen-dependent. To eliminate androgen deficiency in patients with hypogonadotropic hypogonadism, if there is a need for reproductive rehabilitation, stimulant therapy is used, since testosterone drugs suppress spermatogenesis. Chorionic gonadotropin (HCG) drugs (pregnyl, prophasy, choragon) are used, which are prescribed at the beginning of the course as monotherapy for a period of up to 3-6 months, and subsequently, if there is insufficient effectiveness, recombinant follitropin (FSH) drugs are added to therapy. The dose of drugs is selected based on the results of serial determinations of testosterone levels in the blood serum and control studies of spermograms. Men with a baseline testicular volume greater than 4 cm3 have a good prognosis for restoration of fertility. A separate issue is the choice of therapy in patients with mixed hypogonadism, which develops with obesity, the pathogenesis of which is based on disturbances in the negative feedback of the hypothalamus-pituitary-gonad. Recently, studies have appeared that show that hypogonadism in such patients develops as a “secondary” process, against the background of previously occurring nutritional obesity, which leads to changes in the metabolism of sex hormones. Thus, a number of studies have demonstrated normalization of LH levels along with a decrease in leptin levels with weight loss in obese patients. Thus, the connection between obesity and testosterone deficiency is obvious, but it is not clear what comes first.Placebo-controlled studies have shown that correction of hypogonadism in obese men by administering androgens leads to a decrease in body mass index (BMI) by reducing the amount of visceral adipose tissue, insulin resistance, reducing diastolic pressure and improving the lipid profile. However, the need to correct hypogonadism that has developed against the background of obesity still remains a subject of debate, since the issue of the primacy of hypogonadism or obesity has not been resolved. Thus, some authors consider hormonal disorders to be secondary, since a decrease in body weight leads to normalization of testosterone levels. According to others, the primacy of hormonal changes is confirmed by exogenous administration of testosterone: in men, the amount of visceral fat is significantly reduced. At the same time, there is an opinion that normalization of testosterone levels

can occur independently, if the patient manages to achieve weight loss and a decrease in waist circumference. In this aspect, the DIMALITE (Diabetes Management by Lifestyle and Testosterone) study is very interesting, in which men with hypogonadism, obesity, newly diagnosed T2DM and metabolic syndrome were divided into 2 groups, one of which received traditional non-drug therapy (physical activity and diet) , and the other group, in addition, received replacement therapy for hypogonadism with testosterone. In both groups, after 52 weeks of therapy, there was a statistically significant decrease in waist circumference, levels of glycated hemoglobin, cholesterol, triglycerides, as well as an increase in total testosterone levels. In a study conducted at the Endocrinology Center and including 40 men with hypogonadism and obesity, a decrease in body weight by 5–10% over 6 months also led to the complete elimination of hypogonadism in 52% of patients, which was accompanied by an improvement in sexual function, well-being and quality of life. Taking these facts into account is of particular importance in the treatment of hypogonadism that has developed against the background of obesity in young men, for whom preservation of reproductive function is important and the prescription of androgen therapy is undesirable. In these cases, when the development of hypogonadism is not accompanied by severe sexual dysfunction, it is advisable not to prescribe androgen therapy to patients, but to recommend weight loss using any available methods (diet restriction, increased physical activity, etc.), which will ultimately lead to the elimination of hypogonadism. It should be noted that eliminating hypogonadism in itself cannot lead to a decrease in body fat mass if the patient does not adhere to the principles of rational nutrition and lifestyle. These principles are the main ones in the treatment of obesity, and androgen therapy is of an auxiliary nature. However, refusal of androgen therapy is possible only if hypogonadism is reversible, when restoration of the gonadotropic function of the pituitary gland can be expected.For the differential diagnosis of this reversibility, it is possible to use a test with antiestrogens: after determining the initial levels of gonadotropins and testosterone, the patient is prescribed clomiphene citrate orally at a dose of 50 mg daily for 10 days; on the 11th day, the levels of gonadotropins and testosterone are re-determined. Normalization of the studied parameters during the test or their increase by 50% or more from the initial values indicates the potential reversibility of hypogonadism. In cases where obesity and hypogonadism in a young man are accompanied by severe sexual dysfunction, the above lifestyle recommendations may be difficult for the patient to implement. In these situations, hypogonadism can be treated by using transdermal short-acting testosterone preparations (Androgel) with their gradual withdrawal after elimination of hypogonadism, sexual dysfunction and weight loss. In this case, the basis of therapy in any case will be changing the patient's eating habits and lifestyle. If there is no effect of therapy in relation to impaired sexual function (in cases of erectile dysfunction), phosphodiesterase type 5 inhibitors (PDE-5) are prescribed - sildenafil, tadalafil, vardenafil, udenafil. It should be noted that PDE-5 inhibitors may enhance the hypotensive effect of nitrates, so taking these drugs in combination is contraindicated. When simultaneously prescribing inhibitors of the cytochrome system (HIV protease inhibitors, erythromycin, ketoconazole, etc.), it is advisable to reduce the dose of PDE-5 type inhibitors. Treatment should not be given to patients whose sexual activity is temporarily limited. Such diseases include: acute myocardial infarction suffered within the last 90 days before the intended use of the drug, unstable angina or angina that occurs during sexual intercourse, heart failure of NYHA class II or higher that developed within the last 6 months, uncontrolled disorders heart rate, hypotension or uncontrolled hypertension, stroke within the last 6 months, and diabetic retinopathy with hemorrhage. In other cases, timely prescribed treatment leads to both complete normalization of sexual function and improvement of the patient's somatic status, which is accompanied by a significant improvement in the quality of life.when obesity and hypogonadism in a young man are accompanied by severe sexual dysfunction, the above lifestyle recommendations may be difficult for the patient to implement. In these situations, hypogonadism can be treated by using transdermal short-acting testosterone preparations (Androgel) with their gradual withdrawal after elimination of hypogonadism, sexual dysfunction and weight loss. In this case, the basis of

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References:

1. Alimdjanovich RJ, Babajanovich KZ, Bahadirovich SZ, Shukurullaevich AD. АНТЕГРАДНАЯАНГИОСКЛЕРОТЕРАПИЯЛЕВОЙТЕСТИКУЛЯРНОЙВЕНЫ. *JOURNAL OF BIOMEDICINE AND PRACTICE*. 2023;8(4). Accessed June 14, 2024. https://tadqiqot.uz/index.php/biomedicine/article/view/8309
2. Ярмухамедова НА, Ризаев ЖА. ИЗУЧЕНИЕ КРАТКОСРОЧНОЙ АДАПТАЦИИ К ФИЗИЧЕСКИМ НАГРУЗКАМ У СПОРТСМЕНОВ СО ВТОРИЧНЫМИ ИММУНОДЕФИЦИТАМИ. *Журнал гуманитарных и естественных наук*. 2023;(6):128-132.
3. П.б Г, Ж.аР, Н.л Х, Бобоев КТ. ПОЛИМОРФИЗМ ГЕНА MTHFR (A1298C) И ВРОЖДЕННЫЕ ПОРОКИ ЧЕЛЮСТНО-ЛИЦЕВОЙ ОБЛАСТИ. *Conferences*. Published online November 10, 2023:62-63.
4. Saadh MJ, Mustafa MA, Kumar S, et al. Advancing therapeutic efficacy: nanovesicular delivery systems for medicinal plant-based therapeutics. *Naunyn-Schmiedeberg's Arch Pharmacol*. Published online May 3, 2024.doi:10.1007/s00210-024-03104-9
5. Allayarov A, Rizaev J, Yusupov A. ADVANTAGES OF LASER TREATMENT OF DIABETIC RETINOPATHY: ANALYSIS OF CLINICAL DATA. *Science and innovation*. 2024;3(D4):142-145.
6. Patel AA, Mohamed AH, Rizaev J, et al. Application of mesenchymal stem cells derived from the umbilical cord or Wharton's jelly and their extracellular vesicles in the treatment of various diseases. *Tissue and Cell*. 2024;89:102415. doi:10.1016/j.tice.2024.102415
7. РизаевЖ, ЕргашеваМ. Bolalardaneyroinfek tsiyadankeyinkelibchiqadigann ogironlikningt ibbiyjihatlarinit ahlilqilish. *САПАПКИ*. 2024;1(1):32-33.
8. Allayarov A, Rizaev J, Yusupov A. CLINICAL EFFICACY OF LASER TREATMENT OF DIABETIC RETINOPATHY. *Science and innovation*. 2024;3(D4):138-141.
9. Alieva D, Rizaev J, Sadikov A. COVID-19 PANDEMIC AND ANALYSIS OF THE CURRENT EPIDEMIOLOGICAL SITUATION IN UZBEKISTAN AND NEIGHBOURING COUNTRIES OF CENTRAL ASIA AND THE WORLD (Analytical review). *Young Scholar's Academic Journal*. 2024;3(2):16-29.
10. Alimdjanovich RJ, Shakirdjanovich KO, Isamiddinovich KA, Kizi RMA. Dynamics of Local Immunity of the Oral Cavity at the Stages of Treatment.*NATURALISTA CAMPANO*. 2024;28(1):2335-2337.
11. Alieva DA, Rizaev JA, Sadikov AA. EPIDEMIOLOGICAL ASSESSMENT OF THE COVID-19 SITUATION AMONG THE SPORTS COMMUNITY.*EPRA International Journal of Research and Development (IJRD)*. 2024;9(5):376-379.
12. Blagonravova AS, АБС, Rizaev ZA, АРЖ, Gileva OS, СГО. Horizons of international cooperation: medical science, practice and education. *Perm Medical Journal*. 2024;41(1):168-170. doi:10.17816/pmj411168-170
13. Alimdjanovich RJ, Shakirdjanovich QO, Isamiddinovich KA, Kizi RMA. Stressand Periodontal Disease (ReviewArticle). *NATURALISTA CAMPANO*. 2024;28(1):2338-2342.
14. Rizaev, J. A., Sh, A. M., Kubaev, A. S., &Hazratov, A. I. (2022). Morphological Changes in the Oral Mucous Membrane in Patients with COVID-19. *American Journal of Medicineand Medical Sciences*, *12*(5), 466-470.

15. Кубаев, А. С., Каршиев, Ш. Г., & Базаров, Б. (2022). Наш опыт хирургического лечения переломов нижней челюсти. *Журнал Биомедицины и практики*, *7*(1).

16. Мақсудов, Д. Д., Кубаев, А. С., & Максудов, Д. Д. (2022). ВИРУСЛИ ГЕПАТИТНИНГ В ТУРИ БИЛАН ОҒРИГАН БЕМОРЛАРНИНГ ЮЗ-ЖАҒ СОҲАСИДАГИ ФЛЕГМОНАЛАРНИ КОМПЛЕКС ДАВОЛАШ ДАСТУРИ. *Биология*, (4), 137.

17. Ризаев, Ж. А., Абдуллаев, А. С., &Кубаев, А. С. (2022). ПЕРСПЕКТИВЫ ЛЕЧЕНИЯ НЕВРИТОВ В КОМПЛЕКСЕ С ЭТИЛМЕТИЛГИДРОКСИПИРИДИНА СУКЦИНАТ И КОМБИЛИПЕН. In *Современная медицина: новые подходы и актуальные исследования* (pp. 20-24).

18. Хикматулоевна ММ, Саидолимович КА, Исомидинович ХА. АНАЛИЗ ОККЛЮЗИОННО-АРТИКУЛЯЦИОННОГО ВЗАИМООТНОШЕНИЯ У ПАЦИЕНТОВ С СИНДРОМОМ БОЛЕВОЙ ДИСФУНКЦИИ ВИСОЧНО-НИЖНЕЧЕЛЮСТНОГО СУСТАВА. *Conferencea*. Published online May 26, 2022:195-196.

19. Марупова МХ, Кубаев АС, Хазратов АИ. ДИАГНОСТИКА И ЛЕЧЕНИЕ СИНДРОМА БОЛЕВОЙ ДИСФУНКЦИИ ВИСОЧНО-НИЖНЕЧЕЛЮСТНОГО СУСТАВА. *Central Asian Academic Journal of Scientific Research*. 2022;2(5):109-112.

20. Элбековна НН, Мухамедович МИ, Эмильевна ХЛ. ИЗУЧЕНИЕ ЧУВСТВИТЕЛЬНОСТИ МИКРОФЛОРЫ ПОЛОСТИ РТА У ПАЦИЕНТОВ, ПОДВЕРГАЮЩИХСЯ СЪЕМНОМУ И НЕСЪЕМНОМУ ОРТОДОНТИЧЕСКОМУ ЛЕЧЕНИЮ, ПРИ ИСПОЛЬЗОВАНИИ НЕКОТОРЫХ ЛЕКАРСТВЕННЫХ ПРЕПАРАТОВ. *ЖУРНАЛ СТОМАТОЛОГИИ И КРАНИОФАЦИАЛЬНЫХ ИССЛЕДОВАНИЙ*. 2022;3(2). AccessedJune 14, 2024. https://tadqiqot.uz/index.php/oral/article/view/5013

21. Бахтиёрович ГП, Алимжанович РЖ, Лукмонович ХН, Тухтабаевич БК. ОСОБЕННОСТИ ВСТРЕЧАЕМОСТИ АЛЛЕЛЬНОГО ПОЛИМОРФИЗМА Ile462Val В ГЕНЕ CYP1A1 СРЕДИ ПАЦИЕНТОВ С ВРОЖДЕННЫМИ ПОРОКАМИ ЧЕЛЮСТНО-ЛИЦЕВОЙ ОБЛАСТИ. *ЖУРНАЛ СТОМАТОЛОГИИ И КРАНИОФАЦИАЛЬНЫХ ИССЛЕДОВАНИЙ*. 2023;4(4). AccessedJune 14, 2024. https://tadqiqot.uz/index.php/oral/article/view/8226

22. А РЖ, А МО, Р ДН. ОСОБЕННОСТИ КЛИНИЧЕСКИХ СИМПТОМОВ И ФУНКЦИОНАЛЬНОГО СОСТОЯНИЯ РЕСПИРАТОРНОЙ СИСТЕМЫ БОЛЬНЫХ С БЫСТОРПРОГРЕССИРУЮЩИМ ПАРОДОНТИТОМ В КОМОРБИДНОМ СОСТОЯНИИ. *Conferencea*. Published online February 11, 2023:40-44.

23. АРЖ, АСМ, ОХФ. Оценка Осведомлённости Семейных Врачей Поликлиник, Кардиологов И Терапевтов О Высокотехнологичной Медицинской Помощи С Использованием Телемедицинских Технологий В Самаркандской Области. *JSML*. 2023;1(2):102-105.

24. Ж.аР, А РД, А МО, Н.р Д. ПАРАЛЛЕЛИ ИММУНОЛОГИЧЕСКИХ И КЛИНИЧЕСКИХ ПОКАЗАТЕЛЕЙ У БОЛЬНЫХ БРОНХИАЛЬНОЙ АСТМОЙ С КОМОРБИДНОЙ ПАТОЛОГИЕЙ ПОЛОСТИ РТА. *European Journal of Interdisciplinary Research and Development*. 2023;12:96-103.

25. Бахтиёрович ГП, Алимжанович РЖ, Лукмонович ХН, Тухтабаевич БК. ПОЛИМОРФНЫЕ ГЕНЫ ЦИКЛА ФОЛАТОВ И ВРОЖДЕННЫЕ ПОРОКИ ЧЕЛЮСТНО-ЛИЦЕВОЙ ОБЛАСТИ. *ЖУРНАЛ СТОМАТОЛОГИИ И КРАНИОФАЦИАЛЬНЫХ ИССЛЕДОВАНИЙ*. 2023;4(4). AccessedJune 14, 2024. https://tadqiqot.uz/index.php/oral/article/view/8220

26. Sarkhadovich AA, Saidalimovich KA, Alimdjanovich RJ. ПОРОГ ВОЗБУДИМОСТИ ПРИ

НЕВРИТЕ НИЖНЕАЛЬВЕОЛЯРНОГО НЕРВА. *JOURNAL OF BIOMEDICINE AND PRACTICE*. 2022;7(4). Accessed June 14, 2024. https://tadqiqot.uz/index.php/biomedicine/article/view/5521

27. Марупова МХ, Кубаев АС, Хазратов АИ. УСОВЕРШЕНСТВОВАТЬ МЕТОДЫ ДИАГНОСТИКИ И ЛЕЧЕНИЯ ПАЦИЕНТОВ С СИНДРОМОМ БОЛЕВОЙ ДИСФУНКЦИИ ВИСОЧНО-НИЖНЕЧЕЛЮСТНОГО СУСТАВА. *Евразийский журнал медицинских и естественных наук*. 2022;2(5):164-167.
28. Ризаев ЖА, Ахорова МШ, Кубаев АС, Хазратов АИ. CHANGES IN THE MUCOUS MEMBRANES OF THE ORAL CAVITY IN PATIENTS DEPENDING ON THE CLINICAL COURSE OF COVID-19.*ЖУРНАЛ СТОМАТОЛОГИИ И КРАНИОФАЦИАЛЬНЫХ ИССЛЕДОВАНИЙ*. 2022;3(1). AccessedJune 14, 2024. https://tadqiqot.uz/index.php/oral/article/view/7158
29. Alimjanovich RJ, ShavkatovnaAM, Saidolimovich KA, Isamiddinovich KA. CLINICAL AND IMMUNOLOGICAL ASPECTS OF THE RELATIONSHIP OF THE ORAL CAVITY AND COVID-19.*Thematics Journal of Education*. 2022;7(2). Accessed June 14, 2024. https://thematicsjournals.in/index.php/tjed/article/view/1024
30. Marupova MH, Kubaev AS, Khazratov AI. DIAGNOSIS AND TREATMENT OF PAIN SYNDROME TEMPOROMANDIBULAR JOINT DYSFUNCTION SYNDROME. *Вестникмагистратуры*. 2022;(5-1 (128)):10-11.
31. Alimdjanovich RJ, Yakubovna EM. MEDICO-SOCIAL ASPECTS OF CHILDHOOD DISABILITY.*JOURNAL OF BIOMEDICINE AND PRACTICE*. 2023;8(3). Accessed June 14, 2024. https://tadqiqot.uz/index.php/biomedicine/article/view/7705
32. GhasemiDarestani N, Gilmanova AI, Al-Gazally ME, et al. Mesenchymal stem cell-released oncolytic virus: an innovative strategy for cancer treatment. *Cell Communication and Signaling*. 2023;21(1):43. doi:10.1186/s12964-022-01012-0
33. Исамиддинович МФ, Саидолимович КА, Жураховна ПБ. METABOLIK SINDROM BILAN KECHAYOTGAN YUZ-JAG‘ SOHASI FLEGMONALARINING KLINIKO-IMMUNOLOGIK XUSUSIYATLARI. *ЖУРНАЛ СТОМАТОЛОГИИ И КРАНИОФАЦИАЛЬНЫХ ИССЛЕДОВАНИЙ*. 2022;3(4). AccessedJune 14, 2024. https://tadqiqot.uz/index.php/oral/article/view/7016
34. Алимджанович РЖ, Саидолимович КА. ORTTIRILGAN YUZ-JAG‘ NUQSONLARI BO‘LGAN BEMORLARGA ORTOPEDIK STOMATOLOGIK YORDAMNI TASHKIL ETISHNI SOTSIOLOGIK BAHOLASH. *ЖУРНАЛ СТОМАТОЛОГИИ И КРАНИОФАЦИАЛЬНЫХ ИССЛЕДОВАНИЙ*. 2022;3(3). AccessedJune 14, 2024. https://tadqiqot.uz/index.php/oral/article/view/7123
35. A.s K, Sh.G K. PATIENTS ASSOCIATED INJURIES WITH FRACTURES OF THE MAXILLOFACIAL REGION: 118 PATIENTS REVIEW. *Достижениянаукиобразования*. 2022;(1 (81)):90-94.
36. Alimdjanovich RJ, Hayitqulovich KJ, Jumayevna YR. SCIENTIFIC SUBSTANTIATION OF ORGANIZATIONAL FORMS OF ACTIVITY OF NURSING STAFF OF REHABILITATION DEPARTMENTS (Review of literature). *European Journal of Interdisciplinary Research and Development*. 2023;12:208-211.
37. Marupova MH, Kubaev AS, Khazratov AI. THE ESSENTIAL ROLE OF DIAGNOSTIC AND TREATMENT METHODS FOR PATIENTS WITH TEMPOROMANDIBULAR JOINT PAIN DYSFUNCTION SYNDROME.*World Bulletin of Public Health*. 2022;10:141-142.

38. Jasur R, Farangiza V. The Use of Modern Technologies in the Diagnosis of Functional Disorders of the Temporomandibular Joint (Literature Review).*Central Asian Journal of Medical and Natural Science*. 2023;4(5):593-597. doi:10.17605/cajmns.v4i5.1875

39. Sodikov SS, Eshimov Z, Ergashev N, Muxammadiyev T. MODERN VIEW IN THE TREATMENT OF PATIENTS WITH TYPE 2 DIABETES MELLITUS. *Educational Research in Universal Sciences*. 2024;3(4 SPECIAL):156-165.

40. Salimova D, Aliyev S, Beknazarov J, Erkayev S, Omonova D. THE MODERN METHODS OF TREATMENT OF DIABETIC NEPHROPATHY. *Research and implementation*. 2024;2(4):92-99.

41. Salaxiddinovich SS, Sardorbek A, Malika G, Nasiba I, Shaxlo K, Asilbek M. Results of 2023 Screening of the Risk of Type 2 Diabetes in Navai Residents. *JSML*. 2024;2(5):3-6.

42. Sabirjanovna KN, Takhirovich DA, Jahongir D, Najmiddin X, Samandar G, Mehrangiz X. Negative Impact of Covid-19 on the Endocrine System. *American Journal of Pediatric Medicine and Health Sciences (2993-2149)*. 2023;1(8):148-153.

43. Takhirovich DA, AbjalilovaZuxra, Axtamova D, Madina J, Sarvar Q. NEW APPROACHES TO EARLY DIAGNOSIS OF MICROANGIOPATHY IN PATIENTS WITH TYPE 1 DIABETES MELLITUS. *PEDAGOG*. 2024;7(3):23-30.

44. Salimova DE, Sitora I, Olimova A, Askarova J. NON-INVASIVE METHODS FOR TREATING DIABETES INSIPIDUS.*Educational Research in Universal Sciences*.2024;3(1):16-22.

45. Salimova DE, Tosharova MA qizi, Keldiyorova NN qizi, Mahmudova IA qizi. OBESITY AS A RISK FOR TYPE 2 DIABETES MELLITUS. *World of Scientific news in Science*. 2024;2(1):552-558.

46. Eshmamatovich KA, Xayrulloevna AS, Kizi XZB, Kizi RMF, Ugli KOO, Ugli KSS. The Effect of Covid-19 on the Pancreas.*Best Journal of Innovation in Science, Research and Development*. 2023;2(10):162-163.

47. Salimova DE, Obidova D, Uroqova M, Sayfullayeva M. PREMATURE OVARIAN FAILURE. *Educational Research in Universal Sciences*. 2024;3(4 SPECIAL):633-639.

48. E.A.Qodirov, Sh.I.Ismoilov, J.J.Valiyev, A.T.Daminov. Qandlidiabetbilanog'riganbemorlarda COVID-19 xavfiningortishipatofiziologiya, davolashvaoldiniolishdagidolzarbmuammolar. *Science and Education*. 2023;4(3):91-101.

49. Negmatova GS, Salimova DE.Qandlidiabet 2-tipning arterial gipertenziyabilanbirga likdakec hishxususiyat larivaularnidavol ashusullari. *Science and Education*. 2023;4(2):516-519.

50. Djurayeva Z.A. IMPACT OF CURRENCY EXCHANGE RATES AND INFLATION ON INTERNATIONAL TOURISM: CASE STUDY UZBEKISTAN. International Scientific Journal Theoretical & Applied Science.2024/8/1. 01/129 92-97.

51. Mustafakulova, S. E., Boynazarov, S. I., Mustafakulov, I. B., Djuraeva, Z. A., &Shokirov, Z. B. (2024). Comprehensive study of labor landscape automation, economic dynamics and the role of tourism. *International Journal of Science and Research Archive, 11*(1), 996-1000.