International Journal of Pediatrics and Genetics
Vol. 3 No. 7 (2025)
ISSN: 2995-5483

Morphological Changes in the Adrenal Glands in Rheumatoid Arthritis

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Relevance of the study. Confirmed that rheumatoid arthritis is associated with severe morphological changes in the lungs, which can significantly worsen patients ' prognosis of recovery and quality of life. Analysis of clinical and morphological data of patients with rheumatoid arthritis has shown that the most common morphological changes in the lungs in this category of patients are interstitial disturbances, pulmonary fibrosis and the formation of granulomas. Specifically, interstitial disturbances have been found in 45% of patients, pulmonary fibrosis in 30%, and granulomatous changes studied in 25% of cases. A meta-analysis of the studies shows that RADA mortality from complications of the cardiovascular system increased by 60% compared to the total population. The presence of generally accepted risk factors does not determine the reasons for the development of atherothrombotic disasters in the RA.pecifically, interstitial disturbances have been found in 45% of patients, pulmonary fibrosis in 30%, and granulomatous changes studied in 25% of cases. A meta-analysis of the studies shows that RADA mortality from complications of the cardiovascular system increased by 60% compared to the total population. The presence of generally accepted risk factors does not determine the reasons for the development of atherothrombotic disasters in the RA. Autoimmune inflammation also plays a leading role in the development of cardiovascular complications. In addition to signs of inflammation, RAda is associated with a risk of cardiovascular disease, as well as hyperactivation of RAAS (renin-angiotensin-aldosterone system), activation of the sympathetic nervous system, persistent pain, and rheumatic therapy. In fact, there is no consensus on the main pathogenetic factor in the pathogenesis of RA and atherosclerosis. In a study of parietal microflora and the level of gastric dysbacteriosis in patients with rheumatoid arthritis, it was found that the severity of dysbiotic changes increased with an increase in the activity level of the inflammatory process in the joints in the parietal microflora in patients with RA.. Thus, Level III dysbiosis was found in 20% of patients with Level I of RA activity, with Level III dysbiosis found in 55.5% of patients; The development of gastric dysbiosis is manifested in a change in the protective barrier potential of this zone, since the microflora of the biotope performs a colonization resistance - protective function. It was found that thyroid pathology in rheumatoid arthritis, thyroid pathology in the RA are associated with high clinical and laboratory activity of the disease, differing in the severity of clinical manifestations that require dynamic monitoring of the functional state of the thyroid gland. The formation of RADA nephropathy is multifactorial and is represented by a variety of clinical and morphological manifestations of renal pathology, despite the nospesific and minor changes in general urine analysis. Visceral manifestations of RA include nephropathy, which occupies a special place, since it remains a determining factor not only in the severity and prognosis of the disease, but also in its results. The causes of nephropathy are diverse: kidney damage can be a manifestation or one of the complications of the disease (secondary amyloidosis), as well as a consequence of side effects of drug treatment. Pathology of the small intestine organs is detected in 13-62% of patients with RA, and this occupies an important place among the articular manifestations of the disease.Pathology of the small intestine organs is detected in 13-62% of patients with RA, and this occupies an important place among the articular manifestations of the disease. In patients with rheumatoid arthritis, chronic enteritis develops primarily as a manifestation of systemic diseases characteristic of RA (microtomir lesions, lymphoplasmic cell reactions) and stages characteristic of enteritis of any origin, that is, superficial, chronic enteritis. When taking Nosteroid anti-inflammatory drugs, the mucous membrane (MS) has certain protective mechanisms, the functioning of many of

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these mechanisms is disrupted. Intestinal pathology in the RA is considered in most literature in terms of side effects of basic therapy.

Reports have been published of impaired blood circulation T-cells (Treg) in patients with RA, increased titration of Th17 cells in plasma and synovial fluid, and their role and importance are being investigated. It is possible that dysregulation and dysbiotic bowel disorders lead to impaired immune tolerance, one of the initial motivating factors for systemic response. The next prognosis is especially negative in patients with systemic manifestations RA: general vasculitis, rheumatoid nodules, lymphadenopathy, damage to the lungs, heart, liver, kidneys and other organs and systems is observed.he next prognosis is especially negative in patients with systemic manifestations RA: general vasculitis, rheumatoid nodules, lymphadenopathy, damage to the lungs, heart, liver, kidneys and other organs and systems is observed. Among the extra - articular manifestations of RA, damage to the small intestine is the least studied, but the most severe process is intestinal amyloidosis, which occurs in 11% of patients and is usually combined with amyloidosis of other internal organs. Anemia syndrome in rheumatoid arthritis occurs in all patients and has been shown to manifest with clinical and laboratory symptoms. Most patients with the disease develop the second and third levels of anemia. The incidence of anemia increases with the level of activity and the duration of the disease. The hemoglobin level in sick women is much lower than in men. The use of only nosteroid anti-inflammatory drugs (NYAQDV) and long-term use of methotrexate as symptom-altering therapy exacerbate the progression of anemia syndrome. These self-regulation processes involve several behavioral and physiological components. However, the most studied component of the stress response in humans and mammals is the activation of the adrenocortical system. Neurons in the paraventricular nucleus (PVN) of the hypothalamus release two neurogormones, CRH and arginine vasopressin (AVP), into the blood vessels connecting the hypothalamus and pituitary gland. Both hormones stimulate the anterior pituitary gland to produce and secrete ACTG into the general bloodstream.eurons in the paraventricular nucleus (PVN) of the hypothalamus release two neurogormones, CRH and arginine vasopressin (AVP), into the blood vessels connecting the hypothalamus and pituitary gland. Both hormones stimulate the anterior pituitary gland to produce and secrete ACTG into the general bloodstream. AKTG, in turn, causes the synthesis of glucocorticoids and their release from the adrenal glands, which plays an important role in the adaptation of the body to stress. When living organisms are exposed to hypoxic conditions, Dusyk A.hehen living organisms are exposed to hypoxic conditions, Dusyk A. V. and in the adrenal glands organized by others (2016), using the example of rats in natural high mountain conditions, it was shown that on the 3rd day of high mountain adaptation, morphological changes occur in all rats, that is, hyperemia (ehen living organisms are exposed to hypoxic conditions, Dusyk A. V. and in the adrenal glands organized by others (2016), using the example of rats in natural high mountain conditions, it was shown that on the 3rd day of high mountain adaptation, morphological changes occur in all rats, that is, hyperemia (expansion of capillaries and their overflow with blood) was observed. On Day 7, a thickening of the glomerulose zone and fasciculata zone was reported due to an excess and swelling of the stroma in the adrenal glands. Day 14 is characterized by thickening of the glomerulosa zone and medulla due to increased cell area, which indicates the functional activity of the adrenal glands, reflecting the functional stress of the body. On the 30th, there was a thickening of the reticular zone and a decrease in the medulla.ay 14 is characterized by thickening of the glomerulosa zone and medulla due to increased cell area, which indicates the functional activity of the adrenal glands, reflecting the functional stress of the body. On the 30th, there was a thickening of the reticular zone and a decrease in the medulla. That is, morphofunctional changes in the adrenal cortex, always accompanied by hypoxia, are characterized by pathological manifestations. A number of foreign scientists argue that under hypoxia conditions, there is also an increase in the secretion of ACTG and an increase in adrenocortical activity. Similarly, the initial exposure to environmental hypoxia also increases adrenal medullary activity, but little is known about the long-term effects of exposure. This is Mammadhasan Y with chronic exposure for 28 days.A A number of foreign scientists argue that under hypoxia conditions, there is also an increase in the secretion of ACTG and

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an increase in adrenocortical activity. Similarly, the initial exposure to environmental hypoxia also increases adrenal medullary activity, but little is known about the long-term effects of exposure. This is Mammadhasan Y with chronic exposure for 28 days. S. (2019) studied the effects of "chronic" discontinuous effects of severe hypobaric hypoxia on rat adrenal morphology. During the experiment, a significant increase in the mass of the adrenal glands was noted due to hyperplasia of the adrenal glands and medulla. In this case, the size of the medulla of the cortex and gland relative to each other does not change. Cortical hyperplasia corresponds to higher ACTG levels previously observed during hypoxiauring the experiment, a significant increase in the mass of the adrenal glands was noted due to hyperplasia of the adrenal glands and medulla. In this case, the size of the medulla of the cortex and gland relative to each other does not change. Cortical hyperplasia corresponds to higher ACTG levels previously observed during hypoxia. Under these conditions, medulla hyperplasia, according to the author, reflects the continuation of the need for catecholamines in a hypoxic environment. Medullary hyperplasia of the adrenal gland appears to be an important effect of long-term severe hypoxia. Thus, the adrenal gland is important for early adaptation to hypoxia. An increase in adrenal gland activity in the initial effects of hypoxia is associated with increased ACTG synthesis and release by the adenohypophysis, but the exact site of action of the hypoxic stimulus is unknown. Similarly, exposure to hypoxia increases adrenal medulla activity.hus, the adrenal gland is important for early adaptation to hypoxia. An increase in adrenal gland activity in the initial effects of hypoxia is associated with increased ACTG synthesis and release by the adenohypophysis, but the exact site of action of the hypoxic stimulus is unknown. Similarly, exposure to hypoxia increases adrenal medulla activity. Adrenal chromaffin cells isolated from newborn rats were shown to be sensitive to hypoxia, which is probably due to inhibiting cellular respiration. In recent years, the scientific community has developed the idea that, as mentioned above, adaptation to hypoxia increases the reserve capacity of the body and is therefore used in clinical practice to prevent and treat various diseases. Interval hypoxia training leads to a change in the ratio of glomerular, zona fasciculata and reticularis of the adrenal glands, as well as an increase in the number density of capillaries with simultaneous inhibitors of free radical processes.

Primary autoimmune adrenal insufficiency or Addison's disease is a disease in which the adrenal sheath cannot effectively produce glucocorticoids and mineralocorticoids. Clinically, the disease is manifested by fatigue, nausea, dizziness, a tendency to increase salt, hyperpigmentation of the skin and mucous membranes.rimary autoimmune adrenal insufficiency or Addison's disease is a disease in which the adrenal sheath cannot effectively produce glucocorticoids and mineralocorticoids. Clinically, the disease is manifested by fatigue, nausea, dizziness, a tendency to increase salt, hyperpigmentation of the skin and mucous membranes. At the same time, autoantibodies to the enzyme 21-hydroxylase, which is involved in the synthesis of adrenal hormones, are detected in patients with Addison's disease. Cases showing a link between Adrenal insufficiency and exposure to adjuvants are listed in the literature. Thus, a 9-year-old patient developed adrenal insufficiency after being vaccinated against the hepatitis B virus.ases showing a link between Adrenal insufficiency and exposure to adjuvants are listed in the literature. Thus, a 9-year-old patient developed adrenal insufficiency after being vaccinated against the hepatitis B virus. A 21-year-old patient with diphtheria, tetanus, and pertussis vaccines has been reported to develop adrenal insufficiency 1 week after receiving the flu vaccine. Since the patient had no history of adrenal insufficiency, a high level of autoantibodies up to 21-hydroxylase was found in the blood, the diagnosis of autoimmune Addison's disease was confirmed. Autopsies of patients with SARS-CoV infection have revealed lymphocyte and monocyte infiltration, necrosis of the adrenal glands, vasculitis of the small veins of the adrenal lining. SARS-CoV virus antigens and genomic sequences are secreted Autopsies of patients with SARS-CoV infection have revealed lymphocyte and monocyte infiltration, necrosis of the adrenal glands, vasculitis of the small veins of the adrenal lining. SARS-CoV virus antigens and genomic sequences are secreted. There is no data on direct damage to the adrenal gland by the SARS-CoV-2 virus, but no doubt has indirect effects through acute stress, hypoxia, hypotension, sepsis, and coagulopathy. To date, there is no reliable evidence that patients with adrenal insufficiency with

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primary (in Addison's patients) or secondary (in patients with congenital adrenal dysfunction) have a higher risk of severe COVID-19. However, patients with Addison's disease and congenital adrenal dysfunction are at a higher risk of developing infectious diseases. Endocrinology societies recommend that patients with adrenal insufficiency adhere to the standard principles of doubling the dose of glucocorticoids taken for illness and fever and switching to intramuscular hydrocortisone injections for vomiting or diarrhea. The results of a Morphological Study obtained using an electron microscope showed that during the experiment it was possible to model chronic systemic inflammation characteristic of rheumatoid arthritis, as well as to detect changes in the tissues of the adrenal gland in experimental animals. In the studied control group of healthy experimental animals, the tissues of the adrenal gland were unchanged and had a normal physiological structure.esults of a Morphological Study obtained using an electron microscope showed that during the experiment it was possible to model chronic systemic inflammation characteristic of rheumatoid arthritis, as well as to detect changes in the tissues of the adrenal gland in experimental animals. In the studied control group of healthy experimental animals, the tissues of the adrenal gland were unchanged and had a normal physiological structure. It is determined that the adrenal gland consists of the cortex and medulla. In turn, the cortex contains three zones: glomerular, fascicular and reticular. Cortical endocrinocytes formed epithelial threads perpendicular to the surface of the adrenal gland. The spaces between the epithelial threads are filled with loose connective tissue through which blood capillaries and nerve fibers pass.In turn, the cortex contains three zones: glomerular, fascicular and reticular. Cortical endocrinocytes formed epithelial threads perpendicular to the surface of the adrenal gland. The spaces between the epithelial threads are filled with loose connective tissue through which blood capillaries and nerve fibers pass. The superficial glomerulosa zone was formed by small cortical endocrinocytes, forming rounded arcs - "glomeruli". The cortical endocrinocytes of the Fasciculata zone have a larger, cubic or prismatic shape, as well as a rounded or slightly irregular nucleus, and are the same for all endocrinocytes, with moderate chromatin, more or less evenly distributed throughout the carioplasma in shape. it appears to be eu - or heteroform. The cytoplasm of cells contains a large number of lipid compounds, the smooth cytoplasmic reticulum is well developed, the mitochondria have characteristic tubular crystals, and the clusters of ribosomes are very densely located. In the reticular zone of the bark of the adrenal glands, epithelial cells relaxed and formed a loose network. The Medulla is separated from the cortex by a thin, continuous layer of connective tissue. This part of the adrenal gland is formed from a set of relatively large round - shaped cells - chromafinocytes or pheochromocytes, among which there are special blood vessels-sinusoids. Among the cells of the Medulla, light epinephrocytes that produce adrenaline and dark norepinephrocytes that produce norepinephrine are distinguishedhis part of the adrenal gland is formed from a set of relatively large round - shaped cells - chromafinocytes or pheochromocytes, among which there are special blood vessels-sinusoids. Among the cells of the Medulla, light epinephrocytes that produce adrenaline and dark norepinephrocytes that produce norepinephrine are distinguished. The cytoplasm of both cells is densely filled with electron dense secretory granules, the nucleus of which, in turn, is filled with a protein that accumulates isolated catecholamines. In addition, the medulla contains multipolar neurons of the autonomic nervous system, as well as supporting process cells of a glial nature.

Conclusion. Analysis of electron microscopy studies data of the adrenal glands of animals of the second group of animals with simulated auxiliary arthritis (experimental group) showed that similar changes developed in cortex and medulla cells without fundamental differences. Thus, the amount of chromatin in the cell nuclei decreased sharply, as a result of which the central part of the nuclei was purified, and a small amount of chromatin in the form of a heteroform was accumulated near the cariolemma. The results of electron microscopy in re-induced adductive arthritis indicate the development of dystrophic and destructive changes in the cellular elements of adrenal tissue., the amount of chromatin in the cell nuclei decreased sharply, as a result of which the central part of the nuclei was pur.

LITERATURE USED

1. Абдуазизова Н. Х. и др. Постковидный синдром и ревматоидный артрит. – 2024.
2. Балабанова Р. М. Современная стратегия и безопасность применения нестероидных противовоспалительных препаратов при ревматических заболеваниях //Лечащий врач. Ревматология. – 2012. – Т. 5. – С. 20-26.
3. Гордеев А. В. и др. Существует ли «почечно-легочный синдром» при ревматоидном артрите? //Современная ревматология. – 2024. – Т. 18. – №. 2. – С. 51–55.
4. Девальд И. В. и др. Поиск предикторов токсичности метотрексата при ревматоидном артрите //Клиницист. – 2024. – Т. 17. – №. 3. – С. 22-30.
5. Жамолов А. Ш., Касимова М. Б. Анемия при ревматоидном артрите : дис. – Санкт-Петербург, 2023.
6. Заяева А. А. и др. Аутоиммунный/воспалительный синдром, индуцированный адъювантами //Архивъ внутренней медицины. – 2024. – Т. 13. – №. 6. – С. 405-412.
7. Ильясов, А.С. и Умаркулова, Г.А. 2024. Морфофункциональное состояние клеточных структур надпочечников при моделировании тиреотоксикоза крыс самок. *Журнал гуманитарных и естественных наук*. 1, 7 (фев. 2024), 72–76.
8. Кадирова Л. В. Морфологические Параметры Надпочечников При Различных Воздействиях //AMALIY VA TIBBIYOT FANLARI ILMIY JURNALI. – 2023. – Т. 2. – №. 5. – С. 182-187.
9. Лялина Вера Валерьевна, Борисовская С.В., Скрипниченко Э.А., Эттингер О.А., Паджева Т.М., Никитин И.Г. Периоперационное ведение пациентов с ревматологическими заболеваниями: рекомендации по применению глюкокортикостероидов, болезнь-модифицирующих антиревматических препаратов, генно-инженерных биологических препаратов, нестероидных противовоспалительных препаратов // Архивъ внутренней медицины. 2022. №1 (63). С.22-34
10. Малыхин А. С., Мерзленко Р. А. Сравнительная оценка функционального состояния щитовидной железы и коры надпочечников у кошек разных возрастов //Международный вестник ветеринарии. – 2023. – №. 2. – С. 236-241.
11. Медведева Е. В. и др. Морфофункциональная характеристика надпочечников и печени крыс Wistar в состоянии однокомпонентного стресса и при его коррекции этилметилгидроксипирида сукцинатом: выпускная бакалаврская работа по направлению подготовки: 06.03. 01-Биология. – 2023.
12. Набиева Б. Ш. РОЛЬ РЕВМАТОЛОГИЧЕСКИХ ЗАБОЛЕВАНИЙ В РАЗВИТИИ ХРОНИЧЕСКОЙ БОЛЕЗНИ ПОЧЕК (литературный обзор) //ББК 54.11 А-380. – 2024. – С. 197.
13. Осипова И. В., Стародубова Ю. Н. Прогнозирование сердечно-сосудистых заболеваний у женщин с ревматоидным артритом //Кардиология. – 2024. – Т. 64. – №. 1. – С. 67-79.
14. Поздняков Д. И. и др. Противовоспалительные и антирезорбтивные эффекты ацилзамещенных производных хромона в условиях экспериментального ревматоидного артрита //Фармация и фармакология. – 2024. – Т. 11. – №. 5. – С. 422-431.
15. Соболева Е. М. Эпифизарно-гипофизарно-надпочечниковая регуляция у больных ювенильным ревматоидным артритом //Таврический медико-биологический вестник. – 2013. – №. 16, № 3 (1). – С. 148-153.

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16. Ураков Ж. Р. СВЯЗЬ РЕВМАТОИДНОГО АРТРИТА С ЗАБОЛЕВАНИЯМИ ЩИТОВИДНОЙ ЖЕЛЕЗЫ //O'ZBEKISTONDA FANLARARO INNOVATSIYALAR VA ILMIY TADQIQOTLAR JURNALI. – 2023. – Т. 2. – №. 19. – С. 1238-1242.
17. Шишмарева А. М., Фатыхова А. Р. СТРОЕНИЕ, ФУНКЦИИ И ЗАБОЛЕВАНИЯ НАДПОЧЕЧНИКОВ У ЖИВОТНЫХ //Современные научные тенденции в ветеринарии. – 2023. – С. 135-138.