

HYPERTENSIVE DISEASE: DISORDERS OF PSYCHONEUROHUMORAL RELATIONSHIPS AND METHODS OF THEIR CORRECTION

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Abstract

This study is devoted to investigating the interrelationship between psychoemotional, neurohumoral, and autonomic nervous system factors in the multifactorial pathogenesis of hypertension (HTN). The study analyzed the influence of psychological stress, anxiety, depression, and intrapersonal conflicts on the activation of the sympathoadrenal system and the persistent elevation of arterial blood pressure. The role of metabolic factors such as obesity and hyperleptinemia in the development of hypertension was also considered.

Patients were classified into three main groups based on changes in psychoemotional status and neurohumoral profile, and three variants of psychoneurohumoral disorders were identified: anxious-metabolic, anxious-adrenergic, and aggressive-metabolic variants. The results of the study demonstrated the necessity of an individualized approach to treatment and psychotherapeutic correction in patients with hypertension. The development of individualized therapeutic and psychotherapeutic strategies, as well as the use of medications that normalize the neurohumoral profile, contributes to improving patients' quality of life.

Keywords

Hypertension, psychoemotional status, neurohumoral system, sympathoadrenal system, stress, anxiety, depression, leptin, obesity, arterial pressure, psychoneurohumoral dysfunction, atherosclerosis, thrombogenesis, individualized therapy.

GIPERTONIYA KASALLIGI: PSIXONEYROGUMORAL O'ZARO MUNOSABATLARNING BUZILISHI VA ULARNI KORREKSIYA QILISH USULLARI

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Annotatsiya

Ushbu tadqiqot gipertoniya kasalligining (GB) ko'p omilli patogenezida psixoemotsional, neyroqumoral va vegetativ nerv tizimi o'rtasidagi o'zaro bog'liqlikni o'rganishga bag'ishlangan. Tadqiqotda psixologik zo'riqish, tashvish, depressiya va shaxslararo ichki konfliktlarning simpatoadrenal tizim faollashuviga va arterial bosimning barqaror oshishiga ta'siri tahlil qilindi. Shuningdek, semizlik va giperleptinemiya kabi metabolik omillarning gipertoniya rivojlanishidagi roli ham ko'rib chiqildi.

Bemorlar psixoemotsional holat va neyroqumoral profil o'zgarishlariga ko'ra uch asosiy guruhga ajratildi hamda uch xil psixoneyroqumoral buzilish varianti aniqlandi: tashvishli-metabolik, tashvishli-adrenergik va agressiv-metabolik variantlar. Tadqiqot natijalari gipertoniya bilan og'riqan bemorlarda individual yondashuv asosida davolash va psixoterapevtik korreksiyani qo'llash zarurligini ko'rsatdi. Individual terapiya va psixoterapiya strategiyasini ishlab chiqish, shuningdek, neyroqumoral profilni normallashtiruvchi dori vositalarini qo'llash bemorlarning hayot sifatini yaxshilashga xizmat qiladi.

Kalit so'zlar

Gipertoniya kasalligi, psixoemotsional holat, neyroqumoral tizim, simpatoadrenal tizim, stress, tashvish, depressiya, lepsin, semizlik, arterial bosim, psixoneyroqumoral disfunktsiya, ateroskleroz, trombogenez, individual terapiya.

ГИПЕРТОНИЧЕСКАЯ БОЛЕЗНЬ: НАРУШЕНИЯ ПСИХОНЕЙРОГУМОРАЛЬНЫХ ВЗАИМООТНОШЕНИЙ И СПОСОБЫ ИХ КОРРЕКЦИИ

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Аннотация

Данное исследование посвящено изучению взаимосвязи между психоэмоциональными, нейрогуморальными факторами и вегетативной нервной системой в многофакторном патогенезе гипертонической болезни (ГБ). В работе проанализировано влияние психологического стресса, тревожности, депрессии и внутриличностных конфликтов на активацию симпатoadренальной системы и устойчивое повышение артериального давления. Также рассмотрена роль метаболических факторов, таких как ожирение и гиперлептинемия, в развитии гипертонии.

Пациенты были разделены на три основные группы на основании изменений психоэмоционального статуса и нейрогуморального профиля, а также выделены три варианта психонейрогуморальных нарушений: тревожно-метаболический, тревожно-адренергический и агрессивно-метаболический варианты. Результаты исследования показали необходимость индивидуального подхода к лечению и психотерапевтической коррекции у пациентов с гипертонической болезнью. Разработка индивидуализированных терапевтических и психотерапевтических стратегий, а также применение препаратов, нормализующих нейрогуморальный профиль, способствует улучшению качества жизни пациентов.

Ключевые слова

гипертоническая болезнь, психоэмоциональное состояние, нейрогуморальная система, симпатoadреналовая система, стресс, тревожность, депрессия, лептин, ожирение, артериальное давление, психонейрогуморальная дисфункция, атеросклероз, тромбогенез, индивидуализированная терапия.

Background of the Problem. In the multifactorial pathogenesis of hypertension (HTN), a significant role is attributed to psychological stress, which causes an imbalance in the autonomic nervous system and contributes to a persistent elevation of arterial blood pressure (BP). An important factor in the development of HTN is not only stress but also changes in psychoemotional status, which depend on the nature and balance of different emotions and manifest as anxiety disorders, depression, neurotic disorders, mood disorders, and organic mental disturbances.

Studies have shown that increased activity of the sympathoadrenal system plays a key role in the development and maintenance of HTN, resulting from an imbalance in psychoemotional relationships. Patients with HTN are characterized by intrapersonal conflict that maintains and aggravates chronic stress. Since this conflict is often unresolved, it leads to long-term pathological activation of the sympathetic nervous system (SNS) and the development of HTN. However, SNS activation may also occur through other pathogenetic mechanisms.

One such mechanism is the humoral pathway, which triggers a cascade activation of the SNS and contributes to sustained elevation of BP and the development of HTN in patients with increased body weight. Studies on obesity [4, 11] report that obesity in humans is associated with increased SNS activity. This phenomenon is partly explained by hyperleptinemia, which activates the SNS and

plays a proven negative role in the development and progression of both obesity and HTN.

It has been found that in individuals with obesity and hyperleptinemia, norepinephrine secretion in renal tissues increases approximately twofold, while SNS activity in cardiac tissue decreases. It is suggested that SNS activation in renal tissue may represent a pathophysiological mechanism leading to obesity-related hypertension, meaning that hypertension also has a neurogenic component.

Further comprehensive studies of the neurohumoral profile and psychoemotional status of patients with HTN, and their interrelationship considering the additional influence of overweight and obesity, will help identify the main mechanism of HTN development and maintenance and, consequently, enable individualized therapy.

Aim of the Study. To develop recommendations for the therapeutic management of patients with hypertension based on the study of the relationship between psychoemotional status and neurohumoral profile in HTN patients, taking into account individual clinical features of psychoneurohumoral dysfunction.

Objectives of the Study

1.To characterize the psychoemotional status of HTN patients and assess the impact of its dysfunction on disease progression.

2.To study the neurohumoral profile of HTN patients and identify patterns of its changes considering body weight and psychological characteristics.

3.To determine the relationship between psychoemotional status and neurohumoral profile in HTN patients.

4.To evaluate the impact of neurohumoral imbalance and psychoemotional dysfunction on the development of early atherogenic and thrombogenic changes in HTN patients.

5.To investigate changes in leptin levels, adrenergic reactivity, and quality of life during treatment with moxonidine and hydroxyzine in HTN patients with psychoneurohumoral dysfunction.

6.To justify individualized therapeutic and psychotherapeutic strategies for managing HTN patients considering psychoneurohumoral dysfunction.

Scientific Novelty. This study investigated the relationship between psychoemotional status and neurohumoral profile in patients with HTN.

Psychoemotional dysfunction was ranked based on high levels of situational and trait anxiety, alexithymia, auto-aggression, and a predominance of hostility over aggression. It was found that all HTN patients were statistically divided into three groups:

Group 1: patients with high aggressiveness (28.7%)

Group 2: patients with high levels of both trait and state anxiety and high hostility (39.1%)

Group 3: patients without psychoemotional changes (32.2%)

Three types of psychoneurohumoral disorders were identified:

- anxious-metabolic type
- anxious-adrenergic type
- aggressive-metabolic type

It was determined that changes in neurohumoral parameters in HTN patients depend on the imbalance of the psychoemotional sphere and are associated with body weight.

Practical Significance. An integrative care model for HTN patients has been proposed, taking into account imbalances in psychoneurohumoral relationships. This approach includes the participation of a psychotherapist in treatment and individualized pharmacotherapy using medications capable of restoring the disturbed neurohumoral profile.

Differentiated therapeutic and psychotherapeutic approaches based on psychoneurohumoral characteristics were developed, which improve patients' quality of life.

Positive dynamics in the neurohumoral profile were demonstrated with differentiated pharmacotherapy, including standard HTN treatment combined with imidazoline receptor agonists or anxiolytic agents with sympatholytic activity.

Practical Recommendations

1. In primary care, psychological testing should be included in the examination of HTN patients to identify psychoemotional dysfunction. Involvement of a psychotherapist and/or clinical psychologist and psychopharmacological correction is recommended.

2. Individual treatment planning should consider body weight: leptin levels should be measured in overweight and obese patients, while serotonin levels may be assessed in patients with normal body weight.

3. Based on psychoemotional status and neurohumoral profile, the type of psychoneurohumoral disorder should be determined (anxious-metabolic, anxious-adrenergic, or aggressive-metabolic) to individualize standard treatment.

4. Patients with the anxious-metabolic type require additional monitoring of fibrinogen and RFMC levels due to a high risk of thrombotic complications. For patients with anxious-adrenergic and aggressive-metabolic types, the possibility of early atherosclerosis development should be considered.

Conclusion. This study confirmed the presence of a complex interrelationship between psychoemotional, neurohumoral, and autonomic nervous system

mechanisms in the pathogenesis of hypertension. Psychological stress, anxiety, depression, and intrapersonal conflicts have a significant impact on the activation of the sympathoadrenal system and the persistent elevation of arterial blood pressure. It was also established that metabolic factors such as obesity and hyperleptinemia play an important role in the development of hypertension.

Based on the psychoemotional status and neurohumoral profile of patients, three clinical variants of the disease were identified: anxious-metabolic, anxious-adrenergic, and aggressive-metabolic, which confirms the necessity of an individualized approach to treatment.

The results of the study demonstrated the effectiveness of psychotherapeutic correction and drugs stabilizing the neurohumoral system, in addition to standard therapy. This approach contributes to improving patients' quality of life and reducing the risk of complications.

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