Hypertrophy of the endocrine system, increased tolerance and validation of the psychoactive substance dependence

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Abstract

The article shows that the current level of physiology does not disclose the biological mechanisms of the organism transition from one range to adapt to a higher with an increase in the regular forces of the stimulus above sub extreme. A new trend in the physiology of adaptation proqredient adaptation, explains the mechanism of increasing the tolerance of the organism, with dependence on psychoactive substances (PAS). It is scientifically proved, that dependences of the organism on PAS are the states of progredient adaptation.

Keywords: Hypertrophy, Endocrine system, Progredient adaptation.

Introduction

It is known, that at the pick of dependence on any psychoactive substance (PAS), a person, for example, an opium (heroin) addict uses doses, which are multiple times, almost 10 times, higher than the lethal dose for an ordinary person.The fact, that the drug user does not die, is explained by the increase in the body's tolerance in response to the increase in the dose of PAS.

Urgent issues of medicine are not only identification of mechanisms for increasing tolerance, but also validation of the physiological process occurring on exposure to increasing doses of a psychoactive substance and the response increase in tolerance of a PAS dependent organism.

As it was mentioned above, an increase in the effect of an external stimulus up to a high level and the rise to the second stage of the stress reaction, the resistance stage, lead to the development of hypertrophy of the adrenal cortex with an increase in the secretion of corticosteroids increasing, in turn, resistance to the stimulus. Indeed, according to pathophysiology, without such adaptation mechanisms increasing the tolerance, the body must die from exhaustion, from failure of adaptation mechanisms, when the organism transits from the first adaptation range to the second. But in a PAS dependent people, this is not observed. This indicates failure of the current level of physiology to explain the mechanisms providing the body transition from one adaptation range reactivity to a higher one.

Description

Features of the response of the neuroendocrine system to any external stimulus, Capacity of the endocrine system for positive trophic changes. Hypertrophy and hyperfunction of the endocrine system histological and biochemical evidence.

The response of the body to any change in the internal environment depends primarily on the functional state of the neuroendocrine system.

Thus, the cause of the altered body's reactivity and a steady increase in the overall tolerance of the body, should be sought in the central mechanisms of adaptation - in the neuroendocrine system.

The increase in tolerance of the PAS dependent organism can be explained by the functional tension of the neuroendocrine system and by the reaction of persistent activation only within one adaptation range. It is good health, physical activity, increased protective capacities of the body to various hazards - hypothermia, etc., which are clinically observed in the pro droma and possibly in the initial stage of alcohol dependence.

But tension in the neuroendocrine system and the reaction of persistent activation fail to explain the transition from a lower to a higher adaptation range following PAS exposure above sub-extreme level and its further increase! After all, in such a situation, the body must experience stress with exhaustion and death! This can only be explained by the transcendental

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functioning of the neuroendocrine system, which can be possible only due to its adaptive hypertrophy, in response to the regular exposure to the external factor. But is it possible? According to the theory of physiology of the development of interrelations between the structure and the function, in the course of ontogenesis (individual's development), functional activity is of particular importance and it is stimulated by the flow of stimuli affecting the organism as a result of changes in living conditions. Functional activity is the leading factor causing adaptive reactions in the body up to the development of morphological changes. Morphological changes occur in organs or systems stimulated by a flow of stimuli more regularly.

It can be argued that the regular use of PAS - addressing the high response range - leads the entire body to the state of the activation reaction - hypermetabolic state, which does not contribute to the accumulation of reserves and the occurrence of positive trophic changes in the body. But one should remember that the hypermetabolic state develops in the "metabolic boiler" - at the level of tissue adaptation mechanisms.

But there is no doubt that the mechanism of advanced excitation also inherents in the endocrine part of the neuroendocrine system, when the endocrine glands, releasing excessive hormones, also "take a pause" for their own trophic recovery processes, but unlike the VNS, these processes lead them to hypertrophy and hyper productivity. After all, hypertrophy resides in structures. Histological evidence of the endocrine system hypertrophy with regular exposure to a medium-strength stimulus is Selye's stress research: "adrenal glands bloom"

Thus, under the regular exposure to PAS as a sub-extreme stimulus, while hypermetabolic processes occur in the "metabolic boiler," accumulation of reserves takes place in the endocrine system, as a result of "advanced excitation". This accumulation of reserves leads to adaptive hypertrophy and hyperfunction of the endocrine system, which results in an increase in the tolerance of the body.

Conclusion

Under regular sub-extreme exposure of the organism to psychoactive substance, the mechanism of "advanced excitation" allows to maintain the activity of the sympathetic VNS, leads to hypertrophy of the adrenal cortex.

Under regular sub-extreme exposure to psychoactive substance, adaptive maintenance of sympathetic VNS activity and adaptive hypertrophic changes in the endocrine system lead to an increase in the tolerance of the body.

In psychoactive substances dependence, due to the adaptive activity of the sympathetic VNS, adaptive hypertrophy and hyperproductivity of the endocrine system, potentially extreme doses have a nonpathogenic sub-extreme effect on the human organism.

Dependence of the body on psychoactive substances due to the increased tolerance of the organism and the transformation of the effect of potentially extreme doses into the sub-extreme effect is the adaptation process.