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THE ROLE OF STRESS IN THE MECHANISMS OF ENDOCRINE SYSTEM DISORDERS

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ABSTRACT

Stress is one of the major global health problems, increasing due to modern lifestyle factors such as rapid pace of life, social pressure, and информацион load. It negatively affects both psychological and physical health, especially in middle-aged individuals. Physiologically, stress is a nonspecific response of the body described by Hans Selye's general adaptation syndrome, which includes alarm, resistance, and exhaustion stages. The main regulatory systems involved are the hypothalamic-pituitary-adrenal (HPA) axis and the sympathoadrenal system, which release stress hormones such as adrenaline, noradrenaline, and cortisol. Cortisol plays a key role in adaptation by regulating metabolism and maintaining homeostasis. While acute stress enhances adaptive capacity, chronic stress leads to dysfunction of regulatory systems, causing prolonged high cortisol levels, metabolic disturbances, and hormonal imbalance. Therefore, studying the relationship between stress and the endocrine system is an important area of modern medicine, particularly in understanding cortisol level changes under stress.

ENDOKRIN TIZIMINING BUZILISH MEXANIZMLARDA STRESNING ROLI

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ABSTRACT

RStress zamonaviy hayotda inson salomatligiga ta'sir qiluvchi eng muhim global muammolardan biri hisoblanadi. Hayot sur'atining tezlashuvi, ijtimoiy va axborot yuklamaning ortishi natijasida stress inson hayotining ajralmas qismiga aylanmoqda. Ayniqsa, o'rta yoshdagi insonlarda stress darajasi yuqori bo'lib, u nafaqat ruhiy, balki umumiy somatik holatga ham salbiy ta'sir ko'rsatadi. Fiziologik jihatdan stress — bu organizmning

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turli omillarga nisbatan nospetsifik javobi bo‘lib, u Gans Selye tomonidan ta’riflangan umumiy adaptatsiya sindromi (xavotir, qarshilik va charchash bosqichlari) orqali namoyon bo‘ladi. Stress reaksiyasida gipotalamo-gipofizar-buyrak usti (HPA) tizimi va simpatoadrenal tizim muhim rol o‘ynaydi. Ushbu tizimlar faollashganda adrenalin, noradrenalin va ayniqsa kortizol ajraladi. Kortizol organizmning stressga moslashuvida markaziy ahamiyatga ega bo‘lib, moddalar almashinuvini boshqaradi va homeostazni saqlaydi. O‘tkir stressda bu jarayon moslashuvni kuchaytiradi, biroq surunkali stressda tizim disfunktsiyasi yuzaga kelib, kortizolning uzoq vaqt yuqori darajada bo‘lishi metabolik buzilishlar va gormonal nomutanosiblikka olib keladi. Shu sababli stress va endokrin tizim o‘rtasidagi bog‘liqlikni o‘rganish zamonaviy tibbiyotning dolzarb yo‘nalishlaridan biri hisoblanadi.

Maqsad. Stressning qondagi kortizol miqdoriga ta’sir mexanizmlarini aniqlash.

Material va metod: Ushbu tadqiqot va klinik kuzatuv elementlari asosida olib borildi. Tadqiqotda 38 yoshdan 70 yoshgacha bo‘lgan jami 60 nafar ishtirokchi (n=60) qamrab olindi. Stress darajasini baholash uchun qabul qilingan stress darajasi shkalas qo‘llanildi, fiziologik stress jarayoni otkazgandan song qonda kortizol miqdiri asosiy biomarker sifatida tanlandi baholash uchun esa kortizol gormoni darajasi asosiy biomarker sifatida tanlandi. Kortizol darajasi ferment bilan bog‘langan immunosorbent tahlil usuli yordamida aniqlanib, biologik material sifatida qon va so‘lak namunalaridan foydalanildi. Namunalar ertalab va kechqurun olindi. Laboratoriya tekshiruvlarida mikroplastinkali spektrofotometr, sentrifuga va inkubatordan foydalanildi. Tadqiqot davomida stressni kamaytiruvchi farmakologik vositalar (valeriana ekstrakti, ginseng va vitamin komplekslari)ning ta’siri haqidagi ilmiy ma’lumotlar tahlil qilindi. Olingan natijalar statistik tahlil usullari yordamida qayta ishlanib baholandi.

Natija: Tadqiqotda ishtirok etgan 60 nafar bemorning demografik va klinik ko‘rsatkichlari tahlil qilindi. Bemorlar 38–50 yosh, 51-60 yosh va 61–70 yosh guruhlariga ajratildi (*1-jadval*).

1-jadval

Yosh bo‘yicha taqsimlanish bemorlar

Yosh guruhi	N	%
38–50	25	41.7
51–60	20	33.3

61–70	15	25.0
Jami	60	100

Tahlil natijalariga ko‘ra, 38–50 yosh guruhida 25 nafar (41.7%), 51–60 yosh guruhida 20 nafar (33.3%) va 61–70 yosh guruhida 15 nafar (25.0%) ishtirokchi qayd etildi. Yosh guruhlari o‘rtasidagi farq statistik jihatdan sezilarli emasligi aniqlandi ($p>0.05$), bu esa tanlangan namunaning nisbatan muvozanatli ekanligini namoyon etadi. (*2-jadval*)

2-jadval

Stress darajasiga qarab bemorlarda klinik belgilarning kechisi buyicha taqsimlanishi

№	Stress darajasi	Klinik belgilar
1	Past (normal)	Organizm barqaror, stress kuzatilmaydi
2	Yengil stress	Yengil asabiylik, tez charchash
3	O‘rta darajadagi stress	Uyqu buzilishi, diqqat pasayishi
4	Yuqori stress	Tashvish, yurak urishi tezlashadi
5	Juda yuqori (og‘ir)	Surunkali stress, psixosomatik buzilishlar

3-Jadval

Stress darajasi bo’yicha taqsimlanish

Past	15	25.0
O‘rta	28	46.7
Yuqori	17	28.3
Jami	60	100

Stress darajasi baholanishi natijasida bemorlarning o‘rtacha ko‘rsatkichi 21.6 ± 5.8 ballni tashkil etdi. Ishtirokchilar orasida past stress darajasi 15 nafar (25.0%), o‘rta daraja 28 nafar (46.7%) va yuqori daraja 17 nafar (28.3%) bemorda aniqlangan (*3-jadval*). Yuqori stress darajasi past stress guruhiga nisbatan statistik jihatdan sezilarli yuqori ekanligi qayd etildi ($p<0.05$). Ayniqsa, yoshlar orasida yuqori stress ko‘rsatkichlari ustunlik qilgani kuzatildi. Kortizol darajasi barcha ishtirokchilarda aniqlanib, uning o‘rtacha qiymati 382.3 ± 96.5 nmol/L ni tashkil etdi. Past stress guruhida kortizol darajasi 250 ± 40 nmol/L, o‘rta stress guruhida 380 ± 60 nmol/L va yuqori stress guruhida 520 ± 85 nmol/L ni tashkil etdi (*4-jadval*).

4-jadval

Kortizol darajasi (nmol/L)

№	Stress darajasi	Ball (shkala bo‘yicha)	Kortizol darajasi (nmol/L)
1	Past (normal)	0 – 13	140 – 350
2	Yengil stress	14 – 20	350 – 500

3	O‘rta darajadagi stress	21 – 27	500 – 700
4	Yuqori stress	28 – 40	700 – 900
5	Juda yuqori (og‘ir)	≥ 41	> 900

Guruhlar o‘rtasidagi farq statistik jihatdan ahamiyatli hisoblanib, ayniqsa yuqori stress guruhida kortizol darajasi past stress guruhiga nisbatan sezilarli darajada yuqori ekanligi aniqlandi ($p<0.01$).

Umuman olganda, olingan natijalar stress darajasi ortishi bilan faoliyatining pasayishini ko‘rsatdi. kortizol darajasining oshishi muvozanatining buzilishi endokrin tizimga salbiy ta’sirini statistik jihatdan tasdiqladi.

Xulosa: Stress organizmning muhim moslashuv reaksiyasi hisoblanib, u turli fiziologik tizimlarga, ayniqsa endokrin tizimga sezilarli ta’sir ko‘rsatadi. O‘tkir stress qisqa muddat davomida gipotalamus–gipofiz–buyrak usti o‘qini faollashtirib, organizmning moslashuv imkoniyatlarini oshiradi, xronik stress esa ushbu tizim faoliyatining buzilishiga olib keladi. Kortizol gormonining uzoq muddat yuqori darajada bo‘lishi metabolik jarayonlarning buzilishiga, energiya almashinuvining o‘zgarishiga hamda gormonal muvozanatning izdan chiqishiga sabab bo‘ladi. Tadqiqot natijalariga ko‘ra, stress darajasi ortishi bilan qondagi kortizol miqdorining statistik jihatdan ahamiyatli oshishi aniqlandi ($p<0.01$). Ayniqsa, yuqori stress guruhida kortizol darajasi past stress guruhiga nisbatan sezilarli darajada yuqori ekani qayd etildi.Yosh omili ham muhim ahamiyat kasb etib, turli yosh guruhlari o‘rtasida ayrim farqlar kuzatildi. Shu bilan birga, katta yoshdagi ishtirokchilarda endokrin tizim faoliyatining tabiiy o‘zgarishlari qayd etildi.Umuman olganda, stress va endokrin tizim o‘rtasida bevosita bog‘liqlik mavjudligi tasdiqlandi. Olingan natijalar stressni nazorat qilish va uning salbiy ta’sirlarini kamaytirish endokrin tizim faoliyatini me’yorlashtirishda muhim ahamiyat kasb etishini ko‘rsatadi..

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