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抑郁情绪、生活习惯与老年高血压患者雌激素受体 α 表达水平的相关性分析*

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摘要 目的:探讨抑郁情绪、生活习惯与老年高血压患者雌激素受体 α (ER- α)表达水平的相关性。**方法:**选取我院2019年1月到2020年1月收治的82例老年高血压患者作为研究对象,将其分为观察组,另选取同期来我院体检的82名健康者,将其分为对照组,检测相关指标并进行相关性分析。**结果:**两组受检者BMI、空腹血糖、吸烟、饮酒、体育锻炼、喜食油腻食物、喜食咸菜或口味较重情况、HAMD评分、SDS评分以及ER α mRNA表达水平对比差异显著($P<0.05$);logistic回归分析表明:BMI、吸烟、饮酒、体育锻炼、喜食咸菜或口味较重、SDS评分以及ER α mRNA表达水平为高血压独立危险因素($P<0.05$);不同吸烟、饮酒水平、喜食咸菜或口味较重情况以及SDS评分水平的患者ER α mRNA表达水平对比差异显著($P<0.05$);Spearman相关分析结果显示:吸烟、饮酒、喜食咸菜或口味较重与ER- α 呈负相关($P<0.05$),SDS评分与ER- α 呈正相关($P<0.05$)。**结论:**BMI、吸烟、饮酒、体育锻炼、喜食咸菜或口味较重、SDS评分以及ER α mRNA表达水平是高血压发生的独立危险因素,其中抑郁情绪和吸烟、饮酒、喜食咸菜或口味较重等生活习惯与ER- α 表达水平明显相关,因此对于ER- α 表达水平明显降低的患者要通过相关措施改善患者生活习惯,控制抑郁情绪,提升患者血压控制水平。

关键词:抑郁情绪;生活习惯;高血压;雌激素受体 α

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Depression, Lifestyle and Estrogen Receptor in Elderly Patients with Hypertension α Correlation Analysis of Expression Level*

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ABSTRACT Objective: To explore the relationship between depression, lifestyle and estrogen receptor in elderly patients with hypertension α The correlation between the expression level and the expression level. **Methods:** 82 elderly patients with hypertension who were admitted to our hospital from January 2019 to January 2020 were selected as the research objects and divided into the observation group. In addition, 82 healthy people who were admitted to our hospital for physical examination during the same period were selected and divided into the control group. The relevant indicators were detected and the correlation analysis was conducted. **Results:** There was no significant difference in gender, age and regular nap between the observation group and the control group($P>0.05$). BMI, fasting blood glucose, smoking, drinking, physical exercise, greasy food, salted vegetables or heavy taste, HAMD score, SDS score and ER score of the two groups were compared α There was significant difference in mRNA expression ($P<0.05$); Logistic regression analysis showed that: BMI, smoking, drinking, physical exercise, preference for pickles or heavy taste, SDS score and ER α The mRNA expression level was an independent risk factor for hypertension ($P<0.05$); Er of patients with different degree of physical exercise α There was no significant difference in the mRNA expression level ($P>0.05$). The Er of the patients with different smoking, drinking level, preference for pickles or heavy taste and SDS score level was significantly higher than that of the control group α There was significant difference in mRNA expression ($P<0.05$); Spearman correlation analysis showed that: physical exercise and estrogen receptor α There was no significant correlation ($P>0.05$). Smoking, drinking, liking pickles or heavy taste were associated with estrogen receptor α SDS score was negatively correlated with ER($P<0.05$) α Positive correlation ($P<0.05$). **Conclusion:** BMI, smoking, drinking, physical exercise, preference for pickles or heavy taste, SDS score and ER α The level of mRNA expression is an independent risk factor for hypertension, in which depression, smoking, drinking, eating pickles or heavy taste and other living habits are closely related to estrogen receptor α The expression lev-

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el of estrogen receptor was significantly correlated with that of estrogen receptor α . Patients with significantly lower expression level should improve their living habits, control their depression and improve their blood pressure control level through relevant measures.

Key words: Depression; Habits and customs; Hypertension; Estrogen receptor α

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前言

随着人们生活水平的提高,我国高血压发病率呈逐年上升趋势,当前的发病率为22%到65%,且发病患者年龄趋于年轻化^[1]。高血压是一种常见的慢性疾病,多发生于中老年人,现已成为威胁我国人民健康的重大公共卫生问题^[2]。研究发现^[3],老年高血压患者多存在吸烟、喝酒、口味偏咸等不良生活习惯。且随着老年患者身体机能灵活度降低,高血压疾病更加容易加重患者心理压力,产生抑郁现象,进而延缓康复时间。因此,为了分析高血压抑郁情绪患者的发生发展机制,并寻找相关血液指标判定患者的实际状态,指导患者生活习惯,大量学者推荐应用相关技术来对高血压患者进行评价。雌激素是一种由芳香化酶催化雄激素转化而成的一种类固醇激素,目前已有研究发现雌激素及其受体和高血压的发生机制具有直接或间接作用^[4]。有国外研究认为^[5,6],雌激素通过调节NO与前列环素等舒张血管物质和雌激素自身舒张血管效应调节血液动力学产生直接作用。此外,雌激素通过头端延髓腹外侧区肾素血管紧张素系统调节血压,以及雌激素和雌激素受体通过一氧化氮/一氧化氮合酶系统在头端延髓腹外侧区及外周血管系统调控血压,产生间接作用^[7,8]。但目前关于雌激素受体 α (Estrogen receptor α , ER- α)表达水平与高血压和高血压患者抑郁情绪、生活习惯的相关性目前尚无明确定论。因此,为了分析ER- α 与高血压发生的关系,本研究探讨了抑郁情绪、生活习惯与老年高血压患者雌激素受体 α 表达水平的相关性。

1 资料与方法

1.1 一般资料

选取我院2019年1月到2020年1月收治的82例老年高血压患者作为研究对象,将其分为观察组。另选取同期来我院体检的82名健康者,将其分为对照组。其中观察组患者男性46例,女性36例;年龄为65-82岁,平均(71.29 $\pm$ 3.42)岁。对照组患者男性43例,女性39例;年龄为65-81岁,平均(71.30 $\pm$ 3.57)岁。

纳入标准:所有患者符合《中国高血压防治指南》中关于原发性高血压的诊断标准,且未使用过降压药物治疗^[9];口服安慰剂2周后患者坐位收缩压 >140 mmHg,舒张压为 >90 mmHg^[10];临床资料完整;年龄 ≥ 65 岁;无免疫功能障碍;无凝血功能异常;所有患者对本研究知情并签署同意书。

排除标准:对本研究所用药物过敏者;入选前一个月应用免疫抑制剂者;药物依赖者;合并恶性肿瘤者;合并严重肝肾功能不全者;合并冠心病、风湿性心瓣膜病、肺心病者。

1.2 方法

收集所有患者相关临床资料,其中包括性别、年龄、身高、体重、空腹血糖、吸烟、饮酒情况、定期午睡、体育锻炼、饮食偏

好、汉密尔顿抑郁量表(HAMD)评分、抑郁自评量表(SDS)评分以及ER- α 表达水平。

ER- α mRNA 检测方法:应用qRT-PCR法与RNAeasy extraction Kit试剂盒(购自美国ABI Applied Biosystems公司)进行血清RNA提取,并应用核酸分光光度计(Nanodrop 2000,美国ThermoFisher)测定ER- α mRNA表达水平。每个样品设置3个生物学重复,并于荧光定量PCR仪上进行反应,计算ER- α mRNA的相对表达量。

1.3 统计学方法

本研究数据采取统计学软件SPSS 23.0进行数据分析,计数资料以(n%)表示,进行 χ^2 检验;计量资料以($\bar{x} \pm s$)表示,多组间比较采用F检验;采用Spearman相关分析方法分析抑郁情绪、生活习惯与老年高血压患者雌激素受体 α 表达水平的相关性;采用logistic回归分析分析高血压独立危险因素;以 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 两组受检者相关临床指标对比

观察组与对照组受检者性别、年龄、定期午睡情况对比无明显差异($P > 0.05$),两组受检者BMI、空腹血糖、吸烟、饮酒、体育锻炼、喜食油腻食物、喜食咸菜或口味较重情况、HAMD评分、SDS评分以及ER- α mRNA表达水平对比差异显著($P < 0.05$),如表1所示。

2.2 影响高血压的多因素分析

logistic回归分析表明:BMI、吸烟、饮酒、体育锻炼、喜食咸菜或口味较重、SDS评分以及ER- α mRNA表达水平为高血压独立危险因素($P < 0.05$),如表2所示。

2.3 82例高血压患者不同生活习惯与抑郁者雌激素受体 α 表达水平

不同体育锻炼程度患者ER- α mRNA表达水平对比无明显差异($P > 0.05$),不同吸烟、饮酒水平、喜食咸菜或口味较重情况以及SDS评分水平的患者ER- α mRNA表达水平对比差异显著($P < 0.05$),如表3所示。

2.4 抑郁情绪、生活习惯与老年高血压患者雌激素受体 α 表达水平的相关性

Spearman相关分析结果显示:体育锻炼与雌激素受体 α 无明显相关性($P > 0.05$),吸烟、饮酒、喜食咸菜或口味较重与雌激素受体 α 呈负相关($P < 0.05$),SDS评分与雌激素受体 α 呈正相关($P < 0.05$),如表4所示。

3 讨论

高血压好发于中老年人,是一种慢性疾病,具有极高的危害性。当治疗不及时或者治疗不准确时,可能会致残或者致死等问题^[2]。雌激素通过和靶器官上雌激素受体结合发挥生物学

效应,包括 α 受体与 β 受体两种^[11]。研究发现^[12-14],ER α 主要存在于可再生组织、神经系统、肝脏、乳腺、子宫及附件以及骨骼系统中,具有遗传多态性。目前已有多项研究发现,ER 基因多态性和恶性肿瘤、骨质疏松、风湿类疾病、妇科疾病以及心血管疾病具有一定相关性^[15-17]。此外,有研究发现^[18,19],ER α 的基因多态性与动脉粥样硬化的危险因素呈明显相关性。

表 1 两组受检者相关临床指标水平对比

Table 1 Comparison of the levels of related clinical indicators between the two groups

Category	Observation group (n=82)	Control group (n=82)	χ^2/t	P
Gender (n)				
Male	46	43	0.220	0.638
Female	36	39		
Age (years)	71.29 $\pm$ 3.42	71.30 $\pm$ 3.57	0.018	0.985
BMI(kg/m ²)	25.14 $\pm$ 2.34	23.19 $\pm$ 2.29	5.393	0.001
Fasting blood glucose (mmol/L)	6.11 $\pm$ 1.57	5.34 $\pm$ 1.26	3.464	0.001
Smoking				
Never	15	38	14.950	0.001
Once	21	12		
Now	46	32		
Drinking				
Never	14	29	15.090	0.001
< 3 times/month	47	48		
$\geq$ 3 times/month	21	5		
Taking a nap on a regular basis				
Yes	32	40	1.110	0.292
No	50	42		
Physical exercise				
Few	47	22	16.760	0.001
Once in a while	21	29		
Frequently	14	31		
Eating preferences				
Like to eat greasy food	42	23	4.590	0.032
Like to eat pickles or strong taste	35	16	15.250	0.001
HAMD (points)	8.64 $\pm$ 3.91	11.72 $\pm$ 4.87	4.466	0.001
SDS (points)	38.47 $\pm$ 10.58	45.38 $\pm$ 10.75	4.419	0.001
Er α mRNA (%)	0.32 $\pm$ 0.06	1.14 $\pm$ 0.15	45.962	0.001

本研究结果表明,观察组与对照组受检者性别、年龄、定期午睡情况对比无明显差异,两组受检者 BMI、空腹血糖、吸烟、饮酒、体育锻炼、喜食油腻食物、喜食咸菜或口味较重情况、HAMD 评分、SDS 评分以及 ER α mRNA 表达水平对比差异显著。由此证明,BMI、空腹血糖过高、不良生活习惯以及抑郁情况均与高血压的发生、发展具有一定关系。与 Spikes T^[20]等研究相一致,Spikes T 等发现:抑郁、焦虑等不良心理因素可对心血管疾病的发生、发展有重要影响。进一步分析其原因可知,脑卒中、高血压等心血管疾病会加重患者抑郁情绪,二者相互作用,形成恶性循环,导致患者出现过度焦虑、高度精神紧张以及情绪过度压抑现象,对高血压的治疗产生影响,使患者病情恶

化^[21]。Padmapriya C 和 Yong X 的报道^[22,23]显示,高血压患者普遍存在吸烟、饮酒、体育锻炼少以及饮食恶习等现象,与本研究结果相符;logistic 回归分析表明:BMI、吸烟、饮酒、体育锻炼、喜食咸菜或口味较重、SDS 评分以及 ER α mRNA 表达水平为高血压独立危险因素。与 M Huang 等^[24]研究具有差异性,此研究发现,雌激素与高血压虽具有一定相关性,但并无表明 ER α 受体的 DNA 表达与高血压的相关性。但与 Aryan L 等^[25]报道相符,雌激素在健康和疾病中调节心血管生理和功能,且 ER α 基因多态性与高血压的发生发展具有明显关系。分析其原因为:雌激素受体通过与雌激素结合使内部出现构象改变,对转录过程产生以及细胞的分化与增殖产生影响,从而影响生物活

表 2 影响高血压的多因素分析
Table 2 Multivariate analysis of hypertension

Factors	Parameter estimates	Standard error	Wald	P	OR	95% CI
BMI	0.892	0.099	5.252	0.006	1.658	0.874~2.359
Fasting plasma glucose	0.421	0.142	0.679	0.253	0.644	0.382~1.353
Smoking	0.552	0.342	1.582	0.042	1.525	1.224~2.422
Drinking	0.463	0.096	8.096	0.023	2.546	1.364~3.475
Physical exercise	0.358	0.257	6.364	0.016	1.245	0.658~2.147
Like to eat greasy food	0.635	0.108	10.484	0.108	0.464	0.210~1.347
Like to eat pickles or strong taste	0.464	0.105	8.484	0.016	2.774	1.876~4.010
HAMD (points)	0.847	0.304	13.274	0.124	0.747	0.314~1.249
SDS (points)	-0.457	0.089	8.145	0.030	2.458	1.359~3.257
ER α mRNA	-0.463	0.096	8.096	0.023	2.546	1.364~3.475

表 3 不同生活习惯与抑郁患者雌激素受体 α 表达水平($\bar{x} \pm s$)
Table 3 Estrogen Receptor α expression level in patients with different lifestyle and depression ($\bar{x} \pm s$)

Project		ER α mRNA(%)	F	P
Smoking				
never	15	0.33 $\pm$ 0.11	3.277	0.043
ever	21	0.27 $\pm$ 0.12		
Now	46	0.26 $\pm$ 0.07		
Drinking				
Never	14	0.25 $\pm$ 0.06	6.594	0.002
< 3 times/month	47	0.31 $\pm$ 0.08		
$\geq$ 3 times/month	21	0.35 $\pm$ 0.09		
Physical exercise				
Few	47	0.28 $\pm$ 0.27	0.095	0.909
Once in a while	21	0.30 $\pm$ 0.24		
Frequently	14	0.31 $\pm$ 0.22		
Like to eat pickles or strong taste				
Yes	35	0.26 $\pm$ 0.09	5.046	0.001
No	47	0.35 $\pm$ 0.05		
SDS (points)				
$\geq$ 38.47 points	30	0.46 $\pm$ 0.11	10.759	0.001
<38.47 points	52	0.22 $\pm$ 0.07		

性与功能;进一步分析 82 例高血压患者不同生活习惯与抑郁者 ER α 表达水平发现,不同体育锻炼程度患者 ER α mRNA 表达水平对比无明显差异,不同吸烟、饮酒水平、喜食咸菜或口味较重情况以及 SDS 评分水平的患者 ER α mRNA 表达水平对比差异显著。Somani YB 研究发现^[26],血管平滑肌细胞和细胞核上的 ER 与雌激素结合后,可使缩血管物质 ET-1 的活性和释放受到抑制,而使舒张血管。Myers P O 与 Yuichiro O 的团队发现^[27,28],吸烟、饮酒、盐分摄入过多均为高血压发生发展的独

立影响因素,与本研究结果相符。由此证明,不同吸烟、饮酒水平、喜食咸菜或口味较重情况以及 SDS 评分水平的患者可能会对 ER α mRNA 表达产生影响;Spearman 相关分析结果显示:体育锻炼与雌激素受体 α 无明显相关性,吸烟、饮酒、喜食咸菜或口味较重与雌激素受体 α 呈负相关,SDS 评分与雌激素受体 α 呈正相关。与 Tan EC 等^[29]研究具有一致性,Tan EC 等发现,雌激素受体表达水平与妊娠期抑郁具有明显相关性,同时也进一步说明本研究结果的科学性。进一步分析可知,患者

表 4 抑郁情绪、生活习惯与老年高血压患者雌激素受体 α 表达水平的相关性

Table 4 Correlation between depression, lifestyle and estrogen receptor α expression in elderly patients with hypertension

Project	Estrogen receptor α	
	r	P
Smoking	-0.586	0.013
Drinking	-0.579	0.018
Physical exercise	0.245	0.109
Like to eat pickles or strong taste	-0.375	0.026
SDS (points)	0.584	0.013

的抑郁情绪与 ER α 表达水平具有一定相关性。这是因为生理性雌激素能促进成人神经元生长与传递功能,阻止神经元细胞萎缩,另外也能影响人类的各项心理活动。而 ER α 表达水平与高血压患者的生活习惯相关,可能是由于不良生活习惯会加重高血压疾病的发展,而 ER α 与高血压的发展具有一定相关性,从而二者存在一定关系^[30]。

综上所述,BMI、吸烟、饮酒、体育锻炼、喜食咸菜或口味较重、SDS 评分以及 ER α mRNA 表达水平是高血压发生的独立危险因素,其中抑郁情绪和吸烟、饮酒、喜食咸菜或口味较重等生活习惯与雌激素受体 α 表达水平明显相关,因此对于雌激素受体 α 表达水平明显降低的患者要通过相关措施改善患者生活习惯,控制抑郁情绪,有助于提升患者血压控制水平。

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