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甲状腺功能减退症患者心理健康状况及影响因素分析

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摘要 目的:研究甲状腺功能减退症患者的心理健康状况及其影响因素,为预防、改善甲减患者心理健康状况提供参考依据。**方法:**选取2014年1月-2016年1月来我院治疗的226例甲减患者作为甲减组,另从杨浦区多个社区随机抽取同期254例健康者作为健康组,采用SCL-90症状自评量表、社会支持评定量表(SSRS)及一般情况调查问卷对两组研究对象进行调查,采用Logistic回归分析甲减患者的影响因素。**结果:**两组性别、年龄及职业之间的差异无统计学意义($P>0.05$),而文化程度、经济收入的差异具有统计学意义($P<0.05$);甲减组患者强迫症状、抑郁、焦虑、精神病性评分及总分均高于健康组($P<0.05$);甲减组患者中焦虑、抑郁、人际关系敏感所占比重较高,分别为30.97%,26.11%,26.11%;与健康组相比,甲减组患者SSRS评分中主观支持、客观支持、支持利用度评分及总分均明显降低($P<0.05$);多因素Logistic回归分析显示社会支持、文化程度为小学、经济收入 <30000 元/年是甲减患者心理健康的影响因素($P<0.05$)。**结论:**甲减患者心理状况较差,存在较严重的焦虑和抑郁情况,在治疗时应注意健康教育和心理关怀,尤其是对收入低、文化程度低或社会支持程度低的患者,应给予及时的心理治疗,可提高患者的生活质量。

关键词:甲减;心理健康;影响因素;SCL-90评分;SSRS评分

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Analysis of Mental Health and Influencing Factors of Patients with Hypothyroidism

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ABSTRACT Objective: To study the mental health status and the influencing factors of patients with hypothyroidism, and to provide references for prevention and improvement of hypothyroidism patients. **Methods:** A total of 226 patients with hypothyroidism, who were treated in Affiliated Changhai Hospital of Second Military Medical University from January 2014 to January 2016, were chosen as hypothyroidism group, and 254 healthy subjects selected from several communities in Yangpu district as healthy group in the same period. The two groups were investigated by the SCL-90 symptoms self-evaluation scale, social support rating scale (SSRS) and general situation questionnaire. The influencing factors of patients with hypothyroidism were analysed by Logistic regression analysis. **Results:** There were no statistical differences in the gender, age and occupation between the two groups ($P>0.05$), but there were statistical differences in the cultural degree and economic income ($P<0.05$). The scores and total scores of the obsessive compulsive symptoms, depression, anxiety and psychoticism in the hypothyroidism group were higher than those in the healthy group ($P<0.05$). The anxiety, depression, and interpersonal sensitivity proportion in the hypothyroidism group were higher, which were 30.97%, 26.11%, 26.11% respectively. Compared with the healthy group, the scores and total scores of subjective support, objective support, and support utilization in the hypothyroidism group were significantly decreased ($P<0.05$). The multi-factor Logistic regression analysis showed that the influencing factors of mental health in the Hypothyroidism patients were economic income <30000 yuan/year, culture degree and the degree of social support. **Conclusion:** Hypothyroidism patients have bad mental health, who are suffering from serious anxiety and depression. They should be paid more attention to health education and psychological care during medical treatment, especially for the patients with low income, low level of education or low degree of social support. Reinforcing mental health services can improve the patients' quality of life.

Key words: Hypothyroidism; Mental health; Influencing factors; SCL-90 score; SSRS score

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前言

甲状腺是人体主要内分泌器官之一,由侧叶和甲状腺峡部构成,结构呈"H"形,主要功能是分泌甲状腺素和降钙素,其中起主要作用的是甲状腺素,其具有加速新陈代谢和维持机体正常生长发育的作用,甲状腺素分泌量下降,则会导致机体代谢下降,这种疾病称为甲状腺功能减退症,简称甲减^[1-3]。其发病机制为机体甲状腺激素合成、分泌下降或其生理效应不足导致的代谢异常^[4]。甲减患者的临床主要表现为畏冷、出汗量下降、动作迟缓、食欲下降及体重下降等,严重影响患者身心健康,甚至会给患者的生命安全造成威胁^[5,6]。甲减的发病原因可能与地域及环境因素密切相关,每4000~5000个新生儿中有1例甲减患儿,老年人患甲减的机率约为1~14%^[7,8]。该病发生率逐年增加,给患者生活带来不便,造成很大的精神痛苦,因此寻找影响减患者心理健康的因素具有重要意义,同时国内对于心理健康的重视度不高,而且这方面的研究较为匮乏。本论文研究甲减患者的心理健康状况及影响因素,以期帮助医务人员从医学、社会、心理等方面给予患者指导,提高患者的生活质量。

1 资料与方法

1.1 一般资料

选择2014年1月-2016年1月到医院治疗的226例甲减患者作为甲减组,纳入标准:①经复查游离三碘甲状腺原氨酸(FT3)、游离四碘甲状腺原氨酸(FT4)、促甲状腺激素(TSH)确诊为甲减的226例患者,临床表现为面色苍白,眼睑和颊部虚肿,低血压,心动过缓,厌食及便秘等;②垂体、肾上腺等重要器官无疾病患者;③患者就诊时未出现创伤和感染等病情;④接受治疗前未使用糖皮质激素及含碘药物等。排除标准:其他甲状腺疾病、接受放免治疗及手术切除患者。其中男56例,女170例。年龄28~74岁,平均年龄为(43.15±3.24)岁;病程1~6年,平均(3.04±1.03)年;文化程度:小学75例,初中62例,高中58例,大学及以上31例;每年经济收入:<30000元100例,30000元126例;职业:农民82例,工人65例,公务员32例,自由职业47例。另外采用随机抽样的方法,从杨浦区多个社区

(殷行、五角场镇等)随机抽取254例健康者作为健康组,其中男66例,女188例,年龄28~75岁,平均年龄为(43.23±3.12)岁;文化程度:小学71例,初中68例,高中50例,大学及以上65例;每年经济收入:<30000元85例,30000元169例;农民90例,工人63例,公务员40例,自由职业61例。两组一般资料比较无统计学差异($P>0.05$),具有可比性。

1.2 方法

1.2.1 调查方法 采用SCL-90症状自评量表[®]、社会支持评定量表(SSRS)^[10]及一般情况调查问卷对所有对象进行调查测评。SCL-90症状自评量表包含躯体化、强迫症状、人际关系敏感、抑郁、焦虑、敌对、恐怖、偏执、精神病性、其他,10个因子,共计90项,采用5级评分(1~5分)法,当因子分 ≥ 2 分或者总分 ≥ 160 分为有心理卫生问题。社会支持评定量表(SSRS)包含主观支持、客观支持和支持利用度3个维度,共10项,总分和3个分量表得分越高说明社会支持程度越好^[11]。一般情况调查问卷则包含性别、年龄、文化程度、经济收入、职业等。由专人对每位对象进行调查,一般由对象独立填写表格,如因文化程度或者其他原因不能自评者,则由专人逐条询问进行代填。

1.2.2 检测方法 所有患者入组前空腹抽取静脉血4 mL,静置20 min,4000 r/min 10 min,取上清液,并采用放射免疫分析法检测游离甲状腺激素T3、T4 (FT3、FT4)及促甲状腺激素(TSH),按照厂商提供的说明书进行严格操作。

1.3 统计学处理

应用SPSS 19.0统计软件进行统计分析,性别、文化程度、职业所占比例等计数资料以率表示,组间比较采用 χ^2 比较,SCL-90、SSRS评分等计量资料以($\bar{x} \pm s$)表示,组间比较采用t检验,多因素Logistic回归分析甲减患者心理健康状况的影响因素,检验标准为 $\alpha=0.05$ 。

2 结果

2.1 两组一般资料对比

两组性别、年龄及职业之间的差异无统计学意义($P>0.05$),而文化程度、经济收入之间的差异具有统计学意义($P<0.05$),如表1所示。

表1 比较两组一般资料

Table 1 Comparison of general information between two groups

Indexes		Hypothyroidism group(n=226)	Healthy group(n=254)	χ^2/t	P
Gender[n]	Male	170(75.22)	188(74.02)	0.092	0.762
	Female	56(24.78)	66(25.98)		
Age(years)		43.15±3.24	43.23±3.12	0.275	0.783
Educational level	Primary	75(33.19)	71(27.95)	11.426	0.001
	Junior	62(27.43)	68(26.77)		
	Senior	58(25.66)	50(19.69)		
	University or above	31(13.72)	65(25.59)		
Economic income (yuan)	<30000	100(44.25)	85(33.46)	5.871	0.015
	30000	126(55.75)	169(66.54)		
	Farmer	82(36.28)	90(35.43)		
Profession	Worker	65(28.76)	63(24.80)	1.479	0.687
	Civil servants	32(14.16)	40(15.75)		
	Freelancer	47(20.80)	61(24.02)		

2.2 两组研究对象 SCL-90 评估结果对比

高于健康组,差异具有统计学($P<0.05$)。见表 2。

甲减组患者强迫症状、抑郁、焦虑、精神病性评分及总分均

表 2 两组研究对象 SCL-90 评分比较($\bar{x} \pm s$, 分)

Table 2 Comparison of SCL - 90 scores between two groups ($\bar{x} \pm s$, scores)

Factors	Hypothyroidism group (n=226)	Healthy group (n=254)	t	P
Somatization	1.50 $\pm$ 0.42	1.47 $\pm$ 0.48	-0.725	0.469
Obsessive-compulsive symptom	1.84 $\pm$ 0.61	1.62 $\pm$ 0.58	-4.048	0.000
Interpersonal sensitivity	1.75 $\pm$ 0.62	1.65 $\pm$ 0.51	-1.937	0.053
Depression	1.82 $\pm$ 0.53	1.50 $\pm$ 0.59	-6.221	0.000
Anxiety	1.86 $\pm$ 0.64	1.39 $\pm$ 0.43	-9.533	0.000
Hostility	1.53 $\pm$ 0.53	1.48 $\pm$ 0.56	-1.001	0.317
Terror	1.28 $\pm$ 0.43	1.23 $\pm$ 0.41	-1.303	0.193
Paranoid	1.46 $\pm$ 0.50	1.43 $\pm$ 0.57	-0.610	0.542
Psychoticism	1.42 $\pm$ 0.45	1.29 $\pm$ 0.42	-3.273	0.001
Total score	144.71 $\pm$ 21.01	129.96 $\pm$ 38.76	-5.093	0.000

2.3 甲减患者 SCL-90 评分因子占比

别为 30.97%,26.11%,26.11%,见表 3。

甲减组患者中焦虑、抑郁、人际关系敏感所占比重较高,分

表 3 甲减患者 SCL-90 评分因子占比

Table 3 SCL-90 score rate in patients with Hypothyroidism

Factors	Number of abnormal psychological (n=226)	Rate (%)
Somatization	9	3.98
Obsessive-compulsive symptom	10	4.42
Interpersonal	59	26.11
Depression	59	26.11
Anxiety	70	30.97
Hostility	8	3.54
Terror	3	1.33
Paranoid	4	1.77
Psychoticism	4	1.77

2.4 两组 SSRS 评分对比

度及总分均明显低于健康组,且差异均具有统计学意义($P<0.05$),如表 4 所示。

甲减组患者 SSRS 评分中主观支持、客观支持、支持利用

表 4 比较两组 SSRS 评分($\bar{x} \pm s$, 分)

Table 4 Comparison of SSRS scores in the two groups ($\bar{x} \pm s$, scores)

Indexes	Hypothyroidism group (n=226)	Healthy group (n=254)	t	P
Subjective support	22.36 $\pm$ 2.98	25.32 $\pm$ 3.21	10.429	0.000
Objective support	9.25 $\pm$ 1.36	9.81 $\pm$ 1.72	3.923	0.000
Support utilization	7.51 $\pm$ 1.35	8.83 $\pm$ 1.46	10.243	0.000
Total score	37.51 $\pm$ 5.22	39.25 $\pm$ 6.09	3.340	0.001

2.5 多因素 Logistic 回归分析

将上述具有统计学差异的文化程度、经济收入、强迫症状、抑郁、焦虑、精神病性、SCL-90 总分、主观支持、客观支持、支持利用度及社会支持总分为自变量,以心理卫生状况为因变量纳入多因素 Logistic 回归分析模型,结果显示社会支持、文化程度为小学、经济收入 <30000 元/年是甲减患者心理健康的影响因素($P<0.05$),见表 5。

3 讨论

甲状腺功能减退症是一种常见的内分泌疾病,由于各种原因引起甲状腺激素的缺乏,导致机体代谢及身体各系统功能减退而出现的临床综合征^[12,13]。该病不仅给患者带来生理上的影响,而且还带来心理上的影响,其对心理健康的影响越来越受到社会的关注,甲减导致心理健康异常的发病机制尚不清楚,研究^[14]发现这可能与大脑 5-羟色胺(5-HT)水平的降低、海马脑源性神经营养因子(BDNF)水平的升高有关;也有研究^[15]表明这可能和胶质细胞有关。甲状腺激素的减少,可影响脑神经功能。下丘脑-垂体-甲状腺轴功能变化在脑卒中发病过程中

起重要作用^[16,17]。研究发现甲状腺激素(TH)对人类大脑发育、认知功能至关重要^[18,19],对儿童的智力及身体发育影响较大,如不及时治疗会严重影响我国的人口素质,因此对甲减患者应积极给予治疗。

表5 心理健康影响因素多因素 Logistic 回归分析

Table 5 Multi-Factor Logistic Regression Analysis of Influencing Factors of Mental Health

Independent variable	β	SE	Wald	P	OR(95%CI)
Primary educational level	-1.184	0.590	4.028	0.045	0.306(0.096,0.973)
Economic income<30000 yuan/year	-1.320	0.710	3.457	0.033	0.267(0.066,1.074)
Social support	1.394	1.147	1.478	0.024	4.031(0.426,38.151)

本研究中对比甲减患者及健康人群的基本资料发现,两组患者的性别、年龄及职业之间的差异无统计学意义($P>0.05$),而文化程度、经济收入的差异具有统计学意义($P<0.05$),提示文化程度、经济收入与甲状腺功能减退存在联系,同时对受试者的 SCL-90 各项指标评分,结果发现强迫症状、抑郁、焦虑、精神病性评分及总分均明显高于健康组($P<0.05$),另外甲减组患者中焦虑、抑郁、人际关系敏感所占比重较高,分别为 30.97%, 26.11%, 26.11%, 本研究 SCL-90 评估结果显示甲减患者心理状况较差,存在较严重的焦虑和抑郁情况,这和业界已有的研究结果^[20,21]一致,出现这种现象的原因是强迫症状、焦虑和抑郁等均有可能影响机体的内分泌系统,进而对甲状腺激素的分泌过程产生影响,最终导致甲状腺功能异常而出现甲减症状^[22,23]。进一步评估两组受试者的 SSRS 评分,结果表明甲减组患者 SSRS 评分中主观支持、客观支持、支持利用度及总分均明显低于健康组($P<0.05$),说明社会及家庭对甲减患者的重视度不足,社会上需要加强这方面的工作力度。最后将上述所有差异有统计学意义的指标进行多因素 Logistic 回归分析,结果发现社会支持、文化程度为小学、经济收入 <30000 元/年是甲减患者心理健康的影响因素($P<0.05$),文化程度越低,经济条件越差,甲减的发病率越高,主要是由于生活压力及对甲减的基础知识了解不足导致的^[24,25],除此之外,甲减患者常伴有语言沟通障碍,与人交流沟通困难,自我评价降低,甚至产生自我羞辱感,认为成了家庭的负担、累赘,另外由于长期服药所带来的麻烦以及需要不定期到医院进行检查所带来的困扰,也给患者带来了心理上的负担,这些在原有病理的基础上进一步加重了心理健康的异常程度^[26,27]。因此在对甲减患者进行生理上医学治疗的同时应注意健康教育和心理关怀,尤其是收入低、文化程度低和社会支持程度低的患者。医护人员应主动接触患者,通过温和、亲切的语言以及握手、安抚等肢体性语言的接触,建立良好的医患关系,表达对患者的关心和支持,帮助患者树立起治愈的信心^[28-30]。鼓励患者倾诉,帮助他们分析问题的来源,探讨如何共同应对、如何减轻并释放自己的压力。诱导患者以积极的心态,解除顾虑,增强抗病的信心。帮助患者改变错误的认知,让患者通过自己的意志力去克服异常情绪。鼓励患者尽量多参加一些社交活动,增强患者战胜疾病的自信心。

综上所述,严密观察甲减患者的心理方面症状,尤其是文化程度低级收入低的群体,同时良好的社会支持可改善其心理健康,最大程度缓解患者抑郁及焦虑的症状,帮助患者树立起良好的心态,达到生理、心理、社会功能的全面康复,从而提高患者的生活质量。

参考文献(References)

- [1] Mainini AP, Monaco C, Pescatori LC, et al. Image-guided thermal ablation of benign thyroid nodules[J]. J Ultrasound, 2016, 20(1): 11-22
- [2] Meng L, Rijntjes E, Swarts HJ, et al. Prolonged hypothyroidism severely reduces ovarian follicular reserve in adult rats [J]. J Ovarian Res, 2017, 10(1): 19
- [3] Skibitsky VV, Fendrikova AV, Pyhalova NE, et al. The Effectiveness of Combination Antihypertensive Therapy in Women with Hypothyroidism and the Metabolic Syndrome [J]. Kardiologiya, 2016, 56(9): 32-39
- [4] Jung WJ, Park SM, Park JM, et al. Severe Hyponatremia Caused by Acute Exogenous Salt Intake Combined with Primary Hypothyroidism [J]. Electrolyte Blood Press, 2016, 14(2): 27-30
- [5] Pardo Campos ML, Musso M, Keselman A, et al. Cognitive profiles of patients with early detected and treated congenital hypothyroidism[J]. Arch Argent Pediatr, 2017, 115(1): 12-17
- [6] Gao F, Wang G, Xu J. Alteration of Hemostatic Parameters in Patients with Different Levels of Subclinical Hypothyroidism and the Effect of L-thyroxine Treatment[J]. Ann Clin Lab Sci, 2017, 47(1): 29-35
- [7] Alenazi SA, Abdalla SH, Mohamed HT, et al. Prevalence of Congenital Hypothyroidism in Northern Border Region of Kingdom of Saudi Arabia[J]. Indian Pediatr, 2017, 54(2): 154-155
- [8] Wang K, Zhang J, Li F, et al. Urinary iodine in early pregnancy is associated with subclinical hypothyroidism in Tianjin, China: an observational study[J]. BMC Endocr Disord, 2017, 17(1): 10
- [9] 张文娟,张健,鲍琳辉,等.医学研究生心理健康状况分析[J].现代生物医学进展, 2016, 16(8): 1541-1545, 1453
- [10] Zhang Wen-juan, Zhang Jian, Bao Lin-hui, et al. The Analysis on Mental Health Status of Medical Graduate Students [J]. Progress in Modern Biomedicine, 2016, 16(8): 1541-1545, 1453
- [11] 任浩进,王丽岳,杨俊,等.社会支持评定量表在迷走性晕厥患者使用的价值[J].心血管康复医学杂志, 2015, (3): 249-252
- [12] Ren Hao-jin, Wang Li-yue, Yang Jun, et al. Value of social support rating scale using in patients with vasovagal syncope [J]. Chinese Journal of Cardiovascular Rehabilitation Medicine, 2015, (3): 249-252
- [11] 范秀红,刘润忠,黄旭,等.清远市陶瓷企业工人社会支持与心理健康的特点及其关系[J].实用预防医学, 2016, 23(6): 687-690
- [12] Fan Xiu-hong, Liu Run-zhong, Huang Xu, et al. Characteristics of social support and mental health and their relationship in ceramic workers in Qingyuan City [J]. Practical Preventive Medicine, 2016, 23(6): 687-690
- [12] Keller-Petrot I, Leger J, Sergeant-Alaoui A, et al. Congenital Hypothyroidism: Role of Nuclear Medicine[J]. Semin Nucl Med, 2017, 47(2):

135-142

- [13] Karethimmaiah H, Sarathi V. Nephrotic Syndrome Increases the Need for Levothyroxine Replacement in Patients with Hypothyroidism [J]. J Clin Diagn Res, 2016, 10(12): OC10-OC12
- [14] Vaidya VA, Castro ME, Pei Q, et al. Influence of thyroid hormone on 5-HT(1A) and 5-HT(2A) receptor-mediated regulation of hippocampal BDNF mRNA expression [J]. Neuropharmacology, 2001, 40(1): 48-56
- [15] Martinez-Galan JR, Escobar del Rey F, Morreale de Escobar G, et al. Hypothyroidism alters the development of radial glial cells in the term fetal and postnatal neocortex of the rat [J]. Brain Res Dev Brain Res, 2004, 153(1): 109-114
- [16] Calil-Silveira J, Serrano-Nascimento C, Laconca RC, et al. Underlying Mechanisms of Pituitary-Thyroid Axis Function Disruption by Chronic Iodine Excess in Rats[J]. Thyroid, 2016, 26(10): 1488-1498
- [17] Šošić-Jurjević B, Ajdžanović V, Filipović B, et al. Functional morphology of pituitary -thyroid and -adrenocortical axes in middle-aged male rats treated with Vitex agnus castus essential oil [J]. Acta Histochem, 2016, 118(7): 736-745
- [18] Zuhur SS, Baykiz D, Kara SP, et al. Relationship Among Pulmonary Hypertension, Autoimmunity, Thyroid Hormones and Dyspnea in Patients With Hyperthyroidism [J]. Am J Med Sci, 2017, 353 (4): 374-380
- [19] Ashwini S, Bobby Z, Sridhar MG, et al. Insulin Plant (<i>Costus pictus</i>) Extract Restores Thyroid Hormone Levels in Experimental Hypothyroidism[J]. Pharmacognosy Res, 2017, 9(1): 51-59
- [20] Badihian S, Jalalpour P, Mirdamadi M, et al. Quality of Life, Anxiety and Depression in Patients with Differentiated Thyroid Cancer under Short Term Hypothyroidism Induced by Levothyroxine Withdrawal [J]. Klin Onkol, 2016, 29(6): 439-444
- [21] Dayan CM, Panicker V. Hypothyroidism and depression[J]. Eur Thyroid J, 2013, 2(3): 168-179
- [22] Krysiak R, Szkróbka W, Okopień B. The effect of l-thyroxine treatment on sexual function and depressive symptoms in men with autoimmune hypothyroidism[J]. Pharmacol Rep, 2017, 69(3): 432-437
- [23] Bathla M, Singh M. Reply to "How prevalent are depression and anxiety symptoms in hypothyroidism?" [J]. Indian J Endocrinol Metab, 2016, 20(6): 883-884
- [24] Park YJ, Lee EJ, Lee YJ, et al. Subclinical hypothyroidism (SCH) is not associated with metabolic derangement, cognitive impairment, depression or poor quality of life (QoL) in elderly subjects [J]. Arch Gerontol Geriatr, 2010, 50(3): e68-e73
- [25] Wouters HJ, Van Loon HC, Van der Klauw MM, et al. No Effect of the Thr92Ala Polymorphism of Deiodinase-2 on Thyroid Hormone Parameters, Health-Related Quality of Life, and Cognitive Functioning in a Large Population-Based Cohort Study [J]. Thyroid, 2017, 27 (2): 147-155
- [26] Pasquali D, Carotenuto M, Leporati P, et al. Maternal hypothyroidism and subsequent neuropsychological outcome of the progeny: a family portrait[J]. Endocrine, 2015, 50(3): 797-801
- [27] Rakhshan M PhD, Ghanbari A Bs, Rahimi A Ms, et al. A Comparison between the Quality of Life and Mental Health of Patients with Hypothyroidism and Normal People Referred to Motahari Clinic of Shiraz University of Medical Sciences [J]. Int J Community Based Nurs Midwifery, 2017, 5(1): 30-37
- [28] Sikjaer T, Moser E, Rolighed L, et al. Concurrent Hypoparathyroidism Is Associated With Impaired Physical Function and Quality of Life in Hypothyroidism[J]. J Bone Miner Res, 2016, 31(7): 1440-1448
- [29] Ta'ieb D, Boumaud C, Eberle MC, et al. Quality of life, clinical outcomes and safety of early prophylactic levothyroxine administration in patients with Graves' hyperthyroidism undergoing radioiodine therapy: a randomized controlled study [J]. Eur J Endocrinol, 2016, 174 (4): 491-502
- [30] Krysiak R, Szkróbka W, Okopień B. The effect of l-thyroxine treatment on sexual function and depressive symptoms in men with autoimmune hypothyroidism[J]. Pharmacol Rep, 2017, 69(3): 432-437

(上接第 6027 页)

- [13] J akebe, K Miyata, S Miura, et al. Effects of the nanotopographic surface structure of commercially pure titanium following anodization--hydrothermal treatment on gene expression and adhesion in gingival epithelial cells [J]. Materials Science and Engineering C, 2014, (42): 273-279
- [14] Eiji Kato, Kaoru Sakurai. Periodontal-like gingival connective tissue attachment on titanium surface with nano- ordered spikes and pores created by alkali- heat treat- ment [J]. Dental Materials, 2015, 31(5): 116-130
- [15] Wang Zhi-fa, Wang Yan, Guo Ji, et al. Research Progress of Titanium and Its Alloy Implant Surface Treatment [J]. Progress in Modern Biomedicine, 2014, 14(31): 6186-6189
- [16] Gittens RA, Scheideler L, Rupp F, et al. A review on the wettability of dental implant surfaces II: Biological and clinical aspects [J]. Acta Biomater, 2014, 10(7): 2907-2918
- [17] Gittens RA, Olivares- Navarrete R, Cheng A. The roles of titanium surface micro/ nanotopography and wettability on the differential response of human osteoblast lineage cells[J]. Acta biomaterialia, 2013, 9(4): 6268-6277
- [18] Mondal J, Aarik L, Kozlova J, et al. Functionalization of Titanium Alloy Surface by Graphene Nanoplatelets and Metal Oxides: Corrosion Inhibition[J]. J Nanosci Nanotechnol, 2015, 15(9): 6533-6540
- [19] Yang Y, Ao H, Wang Y, et al. Cytocompatibility with osteogenic cells and enhanced in vivo anti-infection potential of quaternized chitosan-loaded titania nanotubes [J]. Bone Res, 2016, 20 (4): 16027-16040
- [20] Dingsdag S, Nelson S, Coleman NV. Bacterial communities associated with apical periodontitis and dental implant failure [J]. Microb Ecol Health Dis, 2016, 27: 31307-31314
- Rosales-Leal JJ, Rodríguez- Valverde MA, G. Effect of roughness wettability and morphology of engineered titanium surfaces on osteoblast- like cell adhesion[J]. Colloids Surf A, 2010, 365(1- 3): 222-229