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油田工作人员高尿酸血症患病率调查及其影响因素分析 *

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摘要 目的：了解油田工作人员高尿酸血症（HUA）患病率并分析其影响因素。**方法：**于2018年1月至2018年12月通过随机抽样法选取300例华北油田的工作人员。统计所有油田工作人员的HUA患病率，并根据HUA发生与否分成HUA组41例与非HUA组259例。采用单因素分析及多因素Logistic回归分析HUA的影响因素。**结果：**300例油田工作人员HUA患病率为13.67%（41/300），其中男性油田工作人员血清尿酸水平及HUA患病率均高于女性（均 $P<0.05$）。HUA组肥胖、饮酒、高血压、高血糖、高血脂症人数占比高于非HUA组（均 $P<0.05$）。HUA组尿素氮（BUN）、血肌酐（Scr）水平均高于非HUA组，而肾小球滤过率（eGFR）水平低于非HUA组（均 $P<0.05$）。多因素Logistic回归分析显示，男性、肥胖、饮酒、高血压、高血糖、高血脂症及BUN＞5.0 mmol/L、Scr＞130.0 μmol/L、eGFR＜130.0 mL/（min·1.73m^2）均是油田工作人员HUA的独立危险因素（均 $P<0.05$）。**结论：**油田工作人员HUA患病率较高，应予以重视。男性、肥胖、饮酒、高血压、高血糖、高血脂症、BUN、Scr水平较高以及eGFR较低的人群HUA发生的风险较高，可通过针对上述因素予以干预，继而降低HUA的发生风险。

关键词：高尿酸血症；油田工作人员；影响因素；患病率

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Investigation on the Prevalence of Hyperuricemia in Oilfield Workers and Analyze Its Influencing Factors*

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ABSTRACT Objective: To understand the prevalence of hyperuricemia (HUA) in oilfield workers and analyze its influencing factors. **Methods:** 300 oilfield workers from Huabei oilfield from January 2018 to December 2018 were selected by random sampling method. The prevalence of HUA in all oilfield workers was counted. According to the occurrence of HUA, 41 cases were divided into HUA group and 259 cases into non-HUA group. Univariate analysis and multivariate Logistic regression were used to analyze the influencing factors of HUA. **Results:** The prevalence of HUA in 300 oilfield workers was 13.67% (41/300), and the serum uric acid level and HUA prevalence in male oilfield workers were higher than that in female (all $P<0.05$). The proportion of obesity, drinking, hypertension, hyperglycemia and hyperlipidemia in HUA group were higher than those in non-HUA group (all $P<0.05$). The blood usea nitrogen(BUN) and serum creatinine (Scr) level in HUA group were higher than those in non-HUA group, while the glomerular filtration rate (eGFR) level was lower than that in non-HUA group (all $P<0.05$). Multivariate Logistic regression analysis showed that male, obesity, drinking, hypertension, hyperglycemia, hyperlipidemia and BUN＞5.0 mmoL/L, Scr＞130.0 μmol/L and eGFR＜130.0 mL/(min·1.73m^2)were all independent risk factors for HUA in oilfield workers (all $P<0.05$). **Conclusion:** The prevalence of HUA in oilfield workers is high, which should be paid attention. Male, obesity, drinking, hypertension, hyperglycemia, hyperlipidemia, higher Scr levels, higher BUN levels and lower eGFR leves are at higher risk of HUA. These factors can be intervened to reduce the risk of HUA.

Key words: Hyperuricemia; Oilfield workers; Influencing factors; Prevalence

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前言

高尿酸血症（Hyperuricemia，HUA）属于国内较为常见的一种代谢性疾病，具有较高的发病率，患者主要临床表现为血清尿酸水平的异常升高，如不予以及时有效的治疗，随着病情的不断进展会对患者的生命健康安全造成严重影响[1]。有相关研究报道指出，随着经济水平的迅速发展以及人们生活方式的不断改变，HUA的患病率在全球范围内均呈逐年升高趋势[2]。HUA是一种遗传和环境因素共同作用引起的疾病，饮食习惯、胰岛素抵抗、慢性肾病等均是其影响因素[3]。油田工作人员属于特殊职业人群，绝大多数工作场地均处于偏僻荒凉的戈壁沙漠地带，工人长期在风沙大、干旱炎热的恶劣环境内工作，加之工

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作强度相对较大,与家庭成员聚少离多,在 HUA 患病率方面和常人可能存在着一定程度的差异。迄今为止医学界对于 HUA 患病的决定性因素的认知尚存在不足[4],鉴于此,本文通过研究油田工作人员 HUA 患病率并分析其影响因素,旨在明确油田工作人员 HUA 患病情况及其相关影响因素,进一步为 HUA 的防治提供参考依据,现作以下报道。

1 资料与方法

1.1 一般资料

于 2018 年 1 月至 2018 年 12 月采用随机抽样法选取 300 例华北油田的工作人员进行研究。其中男性 213 例,女性 87 例,年龄 27～58 岁,平均年龄(42.11± 7.50)岁;受教育程度:大专及以下 204 例,本科及以上 96 例;工龄 2～34 年,平均工龄(16.23± 6.23)年。根据 HUA 发生与否分成 HUA 组 41 例与非 HUA 组 259 例。纳入标准:(1)所有纳入对象年龄均≥ 18 周岁;(2)均为油田工作人员;(3)临床资料完整。排除标准:(1)交流沟通障碍或伴有精神疾病者;(2)依从性较差,无法完成相关研究调查者。已获得纳入对象同意,并得到我院伦理委员会批准。

1.2 研究方法

(1)采用我院自制的受试者基本资料调查问卷完成所有纳入对象基本资料的统计、记录,主要内容包括年龄、性别、肥胖、饮酒、高血压、高血糖、高血脂症等。(2)实验室指标水平检测:采用 7060 型全自动生化分析仪检测血清尿酸、尿素氮(Blood usea nitrogen,BUN)、血红蛋白(Hemoglobin,Hb),采用碱性苦味酸法检测受试者血肌酐(Serum creatinine,Scr)水平,肾小球滤过率(Glomerular filtration rate,eGFR)通过 MDRD 公式进行计算,即女性 eGFR= [186×(Scr-1.154)×(年龄 -0.203)×(0.742)]、男性 eGFR=[186×(Scr-1.154)×(年龄 -0.203)],本研究所涉及的试剂盒均购自上海沪震实业有限公司,操作严格按照试剂盒说明进行。

1.3 评价标准

(1)HUA 主要是参照《内科学》第七版中所制定的相关诊断标准进行判定[5],即男性血清尿酸水平≥ 420 μmol/L,女性血清尿酸水平≥ 350 μmol/L。(2)按照体质量指数(Body mass index,BMI)进行肥胖的判定,即 BMI≥ 28 kg/m² 即为肥胖,BMI＜28 kg/m² 即为非肥胖[6]。(3)糖尿病判定标准如下:空腹血糖水平≥ 7.0 mmoLL 可确诊为糖尿病[7]。(4)高血脂症判定标准如下:空腹甘油三酯≥ 2.26 mmoL/L[8]。(5)高血压判定标准如下:收缩压 / 舒张压水平≥ 140/90 mmHg 可确诊为高血压[9]。

1.4 统计学方法

采用 SPSS25.0 统计学软件进行统计分析,计量资料采用均数± 标准差($\bar{x}$± s)描述,组间比较采用独立样本 检验;计数资料采用%表示,实施卡方检验。油田工作人员 HUA 发生的影响因素采用多因素 Logistic 回归分析,检验标准设置为 α=0.05。

2 结果

2.1 不同性别油田工作人员的血清尿酸水平以及 HUA 患病率对比

300 例油田工作人员 HUA 患病率为 13.67%(41/300),男性油田工作人员血清尿酸水平及 HUA 患病率均高于女性(均 P＜0.05),见表 1。

表 1 不同性别油田工作人员的血清尿酸水平以及 HUA 患病率对比

Table 1 Comparison of serum uric acid level and HUA prevalence in oilfield workers of different genders

Groups	n	Serum uric acid(μmol/L)	HUA prevalence(%)
Male	213	288.12± 82.19	35(16.43)
Female	87	254.10± 68.73	6(6.90)
x^2/t	-	3.404	4.760
P	-	0.001	0.029

2.2 两组基线资料比较

HUA 组肥胖、饮酒、高血压、高血糖、高血脂症人数占比高于非 HUA 组(均 P＜0.05),见表 2。

2.3 两组实验室指标水平比较

HUA 组 BUN、Scr 水平均高于非 HUA 组,而 eGFR 水平低于非 HUA 组(均 P＜0.05),见表 3。

2.4 油田工作人员 HUA 影响因素的多因素 Logistic 回归分析

以 HUA 是否发生为因变量,以性别、肥胖、饮酒、高血压、高血糖、高血脂症及 BUN、Scr、eGFR 为自变量,其中因变量赋值如下:发生 HUA=0,不发生 HUA=1。自变量赋值情况如下:男性 =0,女性 =1;肥胖 =0,无肥胖 =1;饮酒 =0,无饮酒 =1;高血压 =0,无高血压 =1;高血脂症 =0,无高血脂症 =1;BUN＞5.0 mmoL/L=0,≤ 5.0 mmoL/L=1;Scr ＞130.0 μmoL/L=0,≤ 130.0 μmoL/L=1;eGFR ＜130.0 mL/(min·1.73 m²)=0,≥ 130.0 mL/(min·1.73 m²)=1。结果显示,男性、肥胖、饮酒、高血压、高血糖、高血脂症及 BUN＞5.0 mmol/L、Scr＞130.0 μmol/L、eGFR＜130.0 mL/(min·1.73 m²)均是油田工作人员 HUA 的独立危险因素(均 P＜0.05),见表 4。

3 讨论

尿酸属于人类嘌呤核糖核酸代谢中产物之一,主要是肾脏完成排泄,一旦血清中的尿酸长期异常升高,极易导致痛风,甚至增加肾脏相关疾病以及心血管疾病的发生风险[10-12]。既往,HUA 多见于西方国家,在亚洲较为少见,然而随着经济的不断发展,从上世纪 90 年代开始,HUA 开始在亚洲多个国家的患病率呈逐年升高趋势[13,14]。目前,普遍认为 HUA 的患病率可能受时间、地区以及种族的影响,且和自身体质、生活习惯、饮食结构、环境因素、遗传因素等密切相关[15,16]。

表 2 两组基线资料比较[n(%)]

Table 2 Comparison of baseline data between the two groups [n(%)]

Factors		HUA group(n=41)	Non-HUA group(n=259)	x^2	*P*
Age	＜40 years old	23(56.10)	140(54.05)	0.060	0.807
	≥ 40 years old	18(43.90)	119(45.95)		
Obesity	Yes	20(48.78)	80(30.89)	5.099	0.024
	No	21(51.22)	179(69.11)		
Drinking	Yes	20(48.78)	81(31.27)	4.858	0.028
	No	21(51.22)	178(68.73)		
Hypertension	Yes	18(43.90)	56(21.62)	9.456	0.002
	No	23(56.10)	203(78.38)		
Hyperglycemia	Yes	12(29.27)	42(16.22)	4.085	0.043
	No	29(70.73)	217(83.78)		
Hyperlipidemia	Yes	17(41.46)	59(22.78)	6.532	0.010
	No	24(58.54)	200(77.22)		

表 3 两组实验室指标水平比较($\bar{x}\pm s$)

Table 3 Comparison of laboratory indicators between the two groups($\bar{x}\pm s$)

Groups	n	BUN(mmol/L)	Scr(μmol/L)	Hb(g/L)	eGFR[mL/(min·1.73m^2)]
HUA group	41	5.42± 1.49	135.02± 13.29	142.39± 16.03	127.74± 36.10
Non-HUA group	259	4.88± 1.20	128.73± 14.02	141.22± 14.20	142.39± 37.24
t	-	2.585	3.072	0.481	2.350
P	-	0.010	0.002	0.631	0.019

表 4 油田工作人员 HUA 影响因素的多因素 Logistic 回归分析

Table 4 Multivariate Logistic regression analysis of Influencing factors of HUA in oilfield worker

Factors	β	Wald x^2	SE	*P*	OR	95%CI
Male	4.174	11.402	2.925	0.032	1.152	0.952～7.259
Obesity	4.252	8.355	3.023	0.023	1.845	1.151～5.175
Drinking	6.173	7.295	4.771	0.005	2.626	1.839～5.284
Hypertension	5.217	12.944	3.395	0.013	1.919	1.357～4.357
Hyperglycemia	4.105	7.394	2.937	0.004	2.534	2.115～6.612
Hyperlipidemia	3.015	6.933	1.038	0.018	2.051	1.485～6.203
BUN＞5.0 mmol/L	2.014	10.482	1.384	0.021	1.042	0.941～3.405
Scr＞130.0 μmol/L	2.834	12.315	2.015	0.017	1.334	1.203～2.033
eGFR＜130.0 mL/(min·1.73 m^2)	1.284	19.843	1.984	0.003	1.653	1.355～4.132

本文结果显示，油田工作人员 HUA 患病率为 13.67%,其中男性油田工作人员血清尿酸水平及 HUA 患病率均高于女性,这与既往研究相似[17,18],说明油田工作人员的 HUA 患病率较高,应引起重视。其中主要原因可能在于:油田工作人员往往需在野外生活,因此无法保证蔬菜新鲜、膳食平衡以及运动规律[19,20],同时,油田前线的工作人员普遍存在酗酒的不良行为,进一步增加了 HUA 的患病率。此外,HUA 组肥胖、饮酒、高血压、高血糖、高血脂症人数占比高于非 HUA 组,且多因素 Logistic 回归分析结果显示男性、肥胖、饮酒、高血压、高血糖、高血脂症均是油田工作人员 HUA 的独立危险因素,分析原因,笔者认为男性相较于女性饮酒的频率较高,而饮酒已是临床上所公认的 HUA 影响因素之一，其中酒精于机体内的代谢分解过程中会消耗较多的三磷酸腺苷,进一步导致尿酸增加,同时会在代谢过程中合成、分泌乳酸,从而抑制肾脏对尿酸的排泄,继而进一步增加尿酸含量,最终增加了 HUA 的发生几率[21-23]。肥胖患者所摄入的富含嘌呤的肉类食物较多，从而提高了 HUA

发生风险，且肥胖患者的脂肪堆积会对机体代谢造成明显的抑制，从而增加了 HUA 的发生概率[24,25]。高血压患者因长期接受降压药物治疗，易引起血容量减少，促进机体对尿酸的重吸收，进一步导致了尿酸水平的升高，同时，高血压患者往往伴有肾功能障碍以及代谢紊乱等，因此会增加 HUA 的发生风险[26,27]。高血脂症则会引起肝细胞脂肪变性，加剧胰岛素抵抗以及脂代谢紊乱，而糖尿病患者普遍存在胰岛素抵抗，进一步提高了 HUA 发生几率[28]。另外，HUA 组 BUN、Scr 水平均高于非 HUA 组，而 eGFR 水平低于非 HUA 组，且多因素Logistic 回归分析表明 BUN＞5.0 mmol/L、Scr＞130.0 μmol/L、eGFR＜130.0 mL/(min·1.73 m^2)均是油田工作人员 HUA 的独立危险因素，我们认为 BUN、Scr 以及 eGFR 均是目前临床上广泛用于反映机体肾脏功能的敏感指标，且随着 BUN、Scr 水平的不断升高以及 eGFR 水平的逐渐降低，反映了机体肾脏功能的下降，随着肾脏功能的降低，机体内的尿酸清除受到影响，增加了血清中尿酸含量，最终导致了 HUA[29]，因此，在临床工作中应重视对油田工作人员肾脏功能的观察，保证肾脏功能的正常，从而降低 HUA 发生几率[30]。

综上所述，油田工作人员 HUA 患病率较高，值得临床重点关注。男性、肥胖、饮酒、高血压、高血糖、高血脂症及 BUN、Scr 水平的升高，eGFR 水平的降低均会增加 HUA 发生风险。因此，在临床实际工作中可通过针对上述因素予以干预，从而达到降低 HUA 发生几率的目的。

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