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2015-2016 年宿州市肾结石患病现况调查及危险因素分析 *

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摘要 目的：分析 2015-2016 年安徽省宿州市肾结石患病情况，并分析该地区肾结石患病的危险因素，为肾结石的防治提供依据。**方法：**选择 2015 年 1 月 ~2016 年 12 月间于我院就诊的肾结石患者 110 例作为研究组，选择同期本院体检的健康志愿者 110 例作为对照组。调查两组基本信息、临床资料、饮食习惯等，并应用单因素和多因素 Logistic 回归分析分析肾结石患病的危险因素。**结果：**108 名肾结石患者年龄 18~75 岁，45~55 岁所占比例最高，占 34.04%，其次是 35~44 岁，占 25.53%，55~64 岁，占 17.02%。单因素分析显示，宿州市肾结石患者发病与吸烟指数、饮酒指数、饮食习惯、每日饮水量、直系亲属肾结石史、尿路感染史、BMI 有关（P<0.05），与文化程度、月收入无关（P>0.05）。多因素 Logistic 回归分析结果显示饮酒指数≥ 200、喜食肉蛋、喜食海鲜、每日饮水量 <1000 mL、直系亲属有肾结石史、有尿路感染史、体质量指数(BMI)>24 kg/m^2 是宿州市肾结石患者发病的危险因素（P<0.05）。**结论：**宿州市肾结石患者发病年龄多集中于 45~55 岁，且该地区发病的危险因素包括饮酒指数≥ 200、喜食肉蛋、喜食海鲜、每日饮水量 <1000 mL、直系亲属有肾结石史、有尿路感染史、BMI>24 kg/m^2，可作为防治肾结石的参考依据。

关键词：肾结石；宿州市；危险因素；调查

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Kidney Stones in Suzhou City during 2015 to 2016: Prevalence Investigation and Risk Factors Analysis*

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Abstract Objective: To analyze the prevalence of kidney stones in Suzhou city of Anhui province during 2015 to 2016, and to analyze the risk factors of kidney stones in this region, and to provide basis for the prevention and treatment of kidney stones. **Methods:** A total of 110 patients with kidney stones, who were treated in Suzhou Municipal Hospital from January 2015 to December 2016, were selected as study group, and 110 healthy people were selected as control group in the same period. The basic information, clinical data and dietary habits of the two groups were investigated, and the risk factors of kidney stones were analyzed by single factor and multiple factor Logistic regression analysis. **Results:** Among 108 patients aged 18~75 years with kidney stones, the highest proportion was 45~55 years old, accounting for 34.04%, followed by 35~45 years old, accounting for 25.53%, and the age of 55~65 years old was accounted for 17.02%.Univariate analysis showed that the incidence of kidney stones in Suzhou city was related to smoking index, drinking index, dietary habits, daily drinking water, history of kidney stones in direct relatives, urinary tract infection and body mass index (BMI) (P<0.05),but it was not related to educational level and monthly income (P>0.05). Multivariate Logistic regression analysis results showed that drinking index≥ 200, eating meat and eggs, eating seafood, daily drinking water <1000 mL, having history of kidney stones in direct relatives, having history of urinary tract infection, BMI>24 kg/m^2 were risk factors of patients with kidney stones in Suzhou city (P<0.05). **Conclusion:** The age of patients with kidney stones in Suzhou city is mainly concentrated in 45~55 years old, and the risk factors of incidence in this region, including drinking index≥ 200, eating meat and eggs, eating seafood, daily drinking water <1000 mL, having history of kidney stones in direct relatives, having history of urinary tract infection, and BMI>24 kg/m^2, can be used as a reference for the prevention and treatment of kidney stones.

Key words: Kidney stones; Suzhou city; Risk factors; Investigation

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前言

肾结石是发生于肾盂、肾盏及肾盂与输尿管连接部位的一类结石，是泌尿系统的常见病，多发于青壮年男性[1,2]。临床表现为腰腹部绞痛、恶心呕吐、血尿等，易引起患者忽视，从而延误最佳的治疗时机[3]。该病可引起血尿和肾区剧烈疼痛，临床反复发作，并可诱发尿路感染和尿路梗阻，严重者甚至发生肾功能衰竭，危及患者生命。有研究报道，沿海地区为肾结石高发地区[4]，宿州市位于安徽省东北部，是长江三角区的重要城市。以往

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有研究报道华东地区成人肾结石患病率为 5.8%[5]。近年来随着人们生活习惯和饮食习惯的改变,肾结石的患病率呈逐年升高的趋势,发病年龄年轻化[6,7],但关于宿州市肾结石的患病现况仍缺乏相关报道。同时肾结石的发病原因复杂,涉及遗传、饮食、环境和生活习惯等多种因素[8,9]。为进一步了解宿州市肾结石患者患病的危险因素,我们对我院收治的肾结石患者进行了分析,现报道如下。

1 资料和方法

1.1 临床资料

选择 2015 年 1 月 ~2016 年 12 月期间于我院就诊的肾结石患者 110 例作为研究组,纳入标准:(1)所有患者均有肾区疼痛、血尿等临床表现,并经 CT 或 B 超确诊为肾结石;(2)病程 6 个月 ~10 年;(3) 所有纳入对象均为宿州市常住人口, 居住时间≥ 10 年;(4)所有患者对本研究知情同意,并签署知情同意书。排除标准:(1)先天性发育畸形、肾脏肿瘤患者;(2)肾结石合并轻中度积水者;(3)重度积水者。其中男性 62 例、女性 48 例,年龄 18~75 岁,平均年龄(45.01± 8.34)岁;病程 6 个月 ~10 年,平均(4.25± 1.16)年。选择同期本院体检的健康志愿者 110 例作为对照组,其中男性 61 例,女性 49 例,年龄 18~76 岁,平均年龄(44.89± 8.12)岁。本研究经医院伦理委员会同意。

1.2 研究方法

1.2.1 问卷调查 参考目前关于肾结石流行病学[10]调查资料进行设计,问卷内容包括:年龄、性别、文化程度、家族疾病史、收入、饮食习惯、吸烟、饮酒、尿路感染史等。吸烟和饮酒情况采用吸烟指数和饮酒指数表示,吸烟指数 = 每天吸烟支数× 吸烟年限;饮酒指数 = 每天饮酒克数× 饮酒年限。所有调查人员在试验前进行统一培训, 详细了解问卷调查方法和注意事项,问卷调查中应如实填写,填写后立即回收,并核实是否有效,本研究发放调查问卷 220 份, 回收有效问卷 215 份, 回收率 97.73%,其中研究组回收有效问卷 108 份,回收率 98.18%,对照组回收有效问卷 107 份,回收率 97.27%。

1.2.2 体格检查 对所有受试者进行身高、体重测量,并计算体质量指数(Body mass index,BMI),BMI= 体重 / 身高 ^{2},由同一组专业医师进行肾脏 B 超检查,受试者俯卧位,将 B 超探头置于背侧肾区,沿受试者肾脏长轴方向进行纵切面检查,移动探头行扇形平扫,当 B 超显示有以下特征诊断为肾结石:(1)肾脏内出现强光点或光团回声,后方同时伴有垂直声影;(2)肾脏内出现多个强回声光带或声影等。

1.3 统计学方法

本研究中采集的所有数据均录入 SPSS25.0 统计学软件进行统计学分析,计数资料以比或率(%)表示,并实施 x^2 检验,计量资料以均数± 标准差($\bar{x}\pm s$)表示,实施 t 检验,应用多因素 Logistic 回归分析分析肾结石患病的危险因素,P<0.05 为差异有统计学意义。

2 结果

2.1 宿州市肾结石患者的年龄构成情况分析

108 名肾结石患者男性 61 例,女性 47 例,年龄 18~75 岁,平均年龄 (44.86± 8.25) 岁, 其中 45~55 岁所占比例最高,占 34.04%;其次是 35 岁 ~44 岁,占 25.53%;55~64 岁,占 17.02%。见表 1。

表 1 宿州市肾结石患者的年龄构成情况分析[n(%)]

Table 1 Analysis of age composition of patients with kidney stones in Suzhou city[n(%)]

Age groups	Male	Female	Total
18~24	3(3.70)	1(4.92)	4(2.13)
25~34	7(11.11)	5(11.48)	12(10.64)
35~44	16(25.93)	12(26.23)	28(25.53)
45~54	18(31.48)	16(29.51)	34(34.04)
55~64	10(16.67)	8(17.02)	18(17.02)
65~75	7(11.11)	5(11.47)	12(10.64)
Total	61	47	108

2.2 宿州市肾结石患者发病的单因素分析

单因素分析显示, 宿州市肾结石患者发病与吸烟指数、饮酒指数、饮食习惯、每日饮水量、直系亲属肾结石史、尿路感染史、BMI 有关(P<0.05),与文化程度、月收入无关(P>0.05),见表 2。

2.3 宿州市肾结石患者发病的多因素 Logistic 回归分析

以是否患有肾结石为自变量,以吸烟指数、饮酒指数、喜食肉蛋、喜食海鲜、每日饮水量、直系亲属肾结石史、尿路感染史、BMI 为因变量进行多因素 Logistic 回归分析,结果显示饮酒指数≥ 200、喜食肉蛋、喜食海鲜、每日饮水量 <1000 mL、直系亲属有肾结石史、有尿路感染史、BMI>24 kg/m^2 是宿州市肾结石患者发病的危险因素(P<0.05),见表 3。

3 讨论

肾结石是临床上常见的上尿路结石,易引起肾脏的损伤和感染[11,12]。近年来,我国肾结石发病率不断增高,如何开展肾结石的防治工作已得到临床的重视。然而肾结石发病原因复杂,目前仍未完全明确。有报道显示,我国肾结石发病率较高,沿海地区肾结石发病率较内地高,同时不同年龄段肾结石发病率不同[13]。宿州市位于长江三角地区,襟连沿海,背倚中原,从近年来泌尿外科临床收治情况来看,肾结石患者并不少见,但目前关于宿州市肾结石的患病现况仍缺乏相关报道。本研究选择我

表 2 宿州市肾结石患者发病的单因素分析[n(%)]

Table 2 Univariate analysis of the incidence of kidney stones in Suzhou city[n(%)]

Factors		Study group(n=108)	Control group(n=107)	X^2	P
Degree of Education	Primary school	7(6.48)	8(7.48)	0.100	0.992
	Junior middle school	32(29.63)	32(29.91)		
	High school	51(47.22)	50(46.73)		
	University and above	18(16.67)	17(15.89)		
Monthly income (yuan)	≤ 4000	25(23.15)	22(20.56)	0.283	0.868
	4000~6000	64(59.26)	67(62.62)		
	≥ 6000	19(17.59)	18(16.82)		
Smoking index	0~100	46(42.59)	68(63.55)	9.479	0.002
	≥ 100	62(57.41)	39(36.45)		
Drinking index	0~200	55(50.93)	75(70.09)	8.261	0.004
	≥ 200	53(49.07)	32(29.91)		
Eating habits	Eating vegetables	26(24.07)	35(32.71)	13.023	0.005
	Eating meat and eggs	28(25.93)	15(14.02)		
	Eating seafood	42(38.89)	30(28.04)		
	Balanced diet	12(11.11)	27(25.23)		
Daily drinking water (mL)	<1000	48(44.44)	22(20.56)	14.672	0.001
	1000~2000	31(28.70)	50(46.73)		
	>2000	29(26.85)	35(32.71)		
History of renal stone in lineal relatives	Yes	21(19.44)	3(2.80)	15.009	0.000
	No	87(80.56)	104(97.20)		
History of urinary tract infection	Yes	18(16.67)	4(3.74)	9.780	0.002
	No	90(83.33)	103(96.26)		
BMI(kg/m^2)	<18	17(15.74)	36(33.64)	22.855	0.000
	18~24	49(45.37)	58(54.21)		
	>24	42(38.89)	13(12.15)		

表 3 宿州市肾结石患者发病的多因素 Logistic 回归分析

Table 3 Multivariate Logistic regression analysis of the incidence of kidney stones in Suzhou city

Relevant indexs	B	SE	Wald X^2	P	OR	95%CI
Smoking index≥ 100	1.128	0.132	3.852	0.086	0.582	0.273~0.747
Drinking≥ 200	1.087	0.128	8.782	0.015	1.284	0.728~1.798
Eating meat and eggs	1.305	0.358	12.332	0.000	3.039	2.158~3.865
Eating seafood	1.735	0.307	13.812	0.000	3.531	2.568~5.862
Daily drinking water<1000 mL	0.828	0.510	5.425	0.025	0.826	0.445~1.398
Having history of renal stone in lineal relatives	1.075	0.582	9.512	0.005	2.862	1.952~3.732
Having history of urinary tract infection	1.108	0.128	11.527	0.000	3.017	2.642~3.952
BMI>24 kg/m^2	0.872	0.320	6.725	0.020	2.827	2.452~3.551

院就诊的肾结石患者及体检的健康志愿者进行对照研究发现，108 名肾结石患者平均年龄(44.86± 8.25)岁。其中 45~55 岁所占比例最高，占 34.04%，其次是 35~44 岁，占 25.53%，55~64 岁，占 17.02%。肾结石发病率并非随年龄增长而不断升高，这可能与本研究中病例选择有关，也可能是 35 岁 ~65 岁人群是社会主力人群，大多从事工作与劳动，平时进食量多，水分摄入不足，压力相对较大，或者可能与激素、内分泌因素有关[14,15]。其具体数据有待于今后开展大规模的抽样调查获得。

本研究结果显示,饮酒指数≥ 200、喜食肉蛋、喜食海鲜、每日饮水量 <1000 mL、直系亲属有肾结石史、有尿路感染史、BMI>24 kg/m^2 是宿州市肾结石患者发病的危险因素。其中,大量饮酒可能影响机体代谢,导致血管异常收缩,是高血压、心脑血管疾病的危险因素[16,17]。大量饮酒人群可能同时存在生活不规律、饮食结构异常等问题,从而加重肾结石的患病风险。目前有研究表明,肾结石的形成与尿钙排泄率过高、草酸代谢异常及磷酸钙饱和度高等有关[18]。长期饮酒可能干扰体内尿钙、草酸、磷酸钙代谢,从而增加肾结石患病风险。研究表明,饮食习惯是影响肾结石发病的另一危险因素。食物蛋白中含有大量的甘氨酸、甘醇酯和羟脯氨酸等,这些物质在体内可以转化为草酸[19]。肉蛋中的嘌呤前体和嘌呤也可以在体内代谢为尿酸[20]。因此大量摄食肉蛋类会增加体内草酸、尿酸含量,当这些物质与钙质结合后可形成结石。海鲜中除含有大量的蛋白质外,还含有大量的嘌呤、胆固醇等,这些都是导致结石病发生的重要危险因素[21]。同时海鲜中还有大量的钙质可以与磷酸、草酸等形成草酸钙和磷酸钙,增加肾结石的发病风险。本研究中喜食肉蛋人群发生肾结石风险增加 3.039 倍,喜食海鲜人群发生肾结石风险增加 3.531 倍,证实饮食习惯是宿州市肾结石发病的主要影响因素,与 Vezzoli G 等研究相符[22]。因此应提倡均衡饮食、多吃素食,以降低肾结石发病风险。饮水量是宿州市肾结石患者发病的又一危险因素。饮水量过低可能降低碳酸钙、草酸钙和磷酸钙的排泄,加大结石形成风险。另外本研究结果还显示直系亲属有肾结石史人群发生肾结石风险增加 2.862 倍。目前研究认为,肾结石患者家属成员中肾结石患病率也较高[23,24]。本研究结果符合这一报道,这可能与原发性高尿酸血症、胱氨酸血症等某些遗传性疾病有关,也可能与肾结石患者家属成员有相似的生活习惯有关[25,26]。有尿路感染史也是促进肾结石形成的重要因素,某些细菌可以产生尿素酶,通过分解尿素使尿液的碱性升高,促进结石形成。肥胖也是肾结石的危险因素,一方面肥胖人群可能因胰岛素抵抗引起尿酸生成增加,促进尿酸钙生成[27,28]。同时肥胖者大多摄入肉蛋较多,尿液中尿钙排泄率过高、草酸代谢异常及磷酸钙饱和度高,因此患肾结石风险较高[29,30]。

综上所述,肾结石发病率并非随年龄增长而不断升高,35~55 岁是肾结石的高发年龄。饮酒指数≥ 200、喜食肉蛋、喜食海鲜、每日饮水量 <1000 mL、直系亲属有肾结石史、有尿路感染史、BMI>24 kg/m^2 是宿州市肾结石患者发病的危险因素,应针对以上因素做好肾结石的防治工作。

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