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肺癌化疗患者癌因性疲乏影响因素及与生存质量、睡眠质量的关系研究*

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摘要 目的:调查肺癌化疗患者癌因性疲乏情况,并分析癌因性疲乏与生存质量、睡眠质量的关系。**方法:**选取2017年3月至2019年11月期间我院收治的189例肺癌化疗患者。分别采用Piper疲乏修正量表(RPFS)评分、肺癌治疗功能评价系统(FACT-L)评分和匹兹堡睡眠质量指数(PSQI)评分对患者疲乏程度、生存质量和睡眠质量进行评价。采用Pearson检验分析癌因性疲乏与睡眠质量、生存质量的关系。采用单因素及多因素Logistic回归分析癌因性疲乏的影响因素。**结果:**共发放问卷189份,回收有效问卷182份,回收率为96.30%。182例肺癌化疗患者中,癌因性疲乏发生率为66.48%(121/182)。将发生癌因性疲乏的患者纳为疲乏组(n=121),未发生癌因性疲乏的患者纳为无疲乏组(n=61)。疲乏组FACT-L评分低于无疲乏组,PSQI评分高于无疲乏组($P<0.05$)。Pearson相关性分析显示:RPFS评分与FACT-L评分呈负相关,而与PSQI评分呈正相关($P<0.05$)。单因素分析显示:无疲乏组与疲乏组组间比较,在文化程度、家庭月收入、血红蛋白、化疗次数、白细胞计数、临床分期、白蛋白方面比较差异均有统计学意义($P<0.05$)。多因素Logistic回归分析显示:白细胞计数、家庭月收入、血红蛋白、文化程度、化疗次数、白蛋白、临床分期均为肺癌化疗患者癌因性疲乏的影响因素($P<0.05$)。**结论:**肺癌化疗患者癌因性疲乏越严重,其睡眠质量和生存质量越差,且癌因性疲乏的产生受多种因素的影响,临床实际中应尽可能针对癌因性疲乏的影响因素对患者进行干预。

关键词:肺癌;化疗;癌因性疲乏;生存质量;睡眠质量;关系;影响因素

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Investigation of Cancer-related Fatigue in Lung Cancer Patients Undergoing Chemotherapy and Its Relationship with Quality of Life and Sleep Quality*

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ABSTRACT Objective: To investigate cancer-related fatigue in lung cancer patients undergoing chemotherapy, and analyze the relationship between cancer-related fatigue and quality of life and sleep quality. **Methods:** 189 cases of lung cancer patients who were admitted to our hospital from March 2017 to November 2019 were selected. The clinical data of patients were collected by questionnaire. The fatigue degree of patients was evaluated by Piper Fatigue Scale (RPFS). The quality of life was evaluated by lung cancer treatment function evaluation system (FACT-L) score. Pittsburgh sleep quality index (PSQI) score was used to evaluate sleep quality. Pearson test was used to analyze the relationship between cancer-related fatigue and quality of life and sleep quality. The influencing factors of cancer-related fatigue were analyzed by univariate and multivariate Logistic regression. **Results:** A total of 189 questionnaires were distributed, and 182 valid questionnaires were recovered, with the recovery rate of 96.30%. In 182 cases of lung cancer patients undergoing chemotherapy, 121 cases developed cancer-related fatigue, the incidence of cancer-related fatigue was 66.48% (121/182). Patients with cancer-related fatigue were included as fatigue group (n=121), and patients without cancer-related fatigue were included as non fatigue group (n=61). The FACT-L score of fatigue group was lower than that of non fatigue group, and PSQI score was higher than that of non fatigue group ($P<0.05$). Pearson correlation analysis showed that RPFS score was negatively correlated with FACT-L score, but positively correlated with PSQI score ($P<0.05$). Univariate analysis showed that, there were significant differences in education level, family monthly income, hemoglobin, chemotherapy frequency, white blood cell count, clinical stage and albumin between the fatigue group and non fatigue group ($P<0.05$). Multivariate Logistic regression analysis showed that white blood cell count, family monthly income, hemoglobin, education level, chemotherapy frequency, albumin and clinical stage were the influencing factors of cancer-related fatigue in lung cancer patients undergoing chemotherapy ($P<0.05$). **Conclusion:** The generation of cancer-related fatigue in lung cancer patients undergoing chemotherapy is affected by a variety of factors, and the more severe the cancer-related fatigue is in patients, the worse their sleep quality and quality of life are. In clinical practice, intervention should be carried out for the influencing factors of cancer-related

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fatigue in patients as far as possible.

Key words: Lung cancer; Chemotherapy; Cancer-related fatigue; Quality of life; Sleep quality; Relationship; Influencing factors

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前言

肺癌是临床常见的恶性肿瘤, 发病率及死亡率均处于前列, 数据显示全球每 30s 就有一人因肺癌而死亡^[1]。由于肺癌早期症状隐匿, 不少患者确诊时已至疾病中晚期, 5 年生存率仅为 16.1%^[2]。化疗是中晚期肺癌患者常见的治疗方式, 然而化疗带来的副作用也令不少患者难以承受。癌因性疲乏是癌症患者的重要症状之一, 也是化疗期间常出现的副作用之一, 与一般的疲乏相比, 癌因性疲乏发生快、程度重、能量消耗大、持续时间长, 可对患者的生理、社会功能及心理等多方面造成影响, 降低患者生存质量^[3-5]。既往研究结果显示^[6,7], 癌症患者的睡眠质量、生存质量等都是潜在的癌因性疲乏影响因素。本研究通过分析其癌因性疲乏与生存质量、睡眠质量的关系, 以期临床干预提供参考。

1 资料与方法

1.1 一般资料

选取 2018 年 3 月至 2019 年 11 月期间我院收治的 189 例肺癌化疗患者, 其中男 97 例, 女 92 例, 年龄 43~72 岁, 平均(57.80±6.79)岁, 纳入标准:(1)诊断标准参考《中国原发性肺癌诊疗规范(2015 年版)》^[8];(2)细胞或组织病理学诊断为肺癌;(3)均符合化疗指征, 知情并同意本研究;(4)具备基本交流沟通能力, 可完成本次研究调查。排除标准:(1)近期或正在接受靶向治疗、同步放疗者;(2)预期生存时间<3 个月;(3)合并心、肝、肾等脏器功能严重障碍;(4)合并其他恶性肿瘤者;(5)合并精神系统疾病、严重认知障碍。

1.2 研究方法

1.2.1 资料收集 采集患者的临床资料, 包括家庭月收入、临床分期、白细胞计数、病理类型、血红蛋白、化疗次数、年龄、白蛋白、性别、婚姻状况、肌酐文化程度。

1.2.2 癌因性疲乏 患者疲乏程度使用 Piper 疲乏修正量表(RPFS)^[9]评分进行评估。RPFS 量表共 4 维度, 分别为躯体疲乏、行为疲乏、情感疲乏、认知疲乏, 总分 10 分, 得分越高表示

疲乏越重。

1.2.3 睡眠质量 睡眠质量采用匹兹堡睡眠质量指数(PSQI)^[10]评分评价, PSQI 量表共 7 维度, 包括入睡时间、日间功能障碍、催眠药物以及睡眠质量、效率、障碍、时间, 总分 21 分, 得分越高, 睡眠质量越差。

1.2.4 生存质量 生存质量采用肺癌治疗功能评价系统(FACT-L)^[11]评分评价, FACT-L 量表共 5 个维度, 包括情感状况、生理状况、社会状况、功能状态、肺癌相关症状。分数越高, 生存质量越高。

1.3 统计学方法

采用 SPSS 25.00 软件进行数据分析。计量资料以($\bar{x} \pm s$)表示, 比较采用独立样本 t 检验。采用 Pearson 检验分析癌因性疲乏与睡眠质量、生存质量的关系。计数资料采用比或率表示, 比较采用卡方检验。单因素及多因素 Logistic 回归分析癌因性疲乏的影响因素。检验水准 $\alpha=0.05$ 。

2 结果

2.1 问卷回收情况

调查员均经专门培训, 问卷内容均由被调查者自行填写, 填写完毕后当场回收并剔除无效问卷。共发放 189 份问卷, 回收 182 份有效问卷, 回收率为 96.30%(182/189)。

2.2 肺癌化疗患者癌因性疲乏情况

182 例肺癌化疗患者中, 发生癌因性疲乏 121 例, 癌因性疲乏发生率为 66.48%。121 例发生癌因性疲乏的患者总体 RPFS 评分为(7.58±0.94)分, 其中行为疲乏维度(1.83±0.82)分、情感疲乏维度(2.03±0.75)分、躯体疲乏维度(2.16±0.62)分、认知疲乏维度评分(1.56±0.61)分。将发生癌因性疲乏的患者纳为疲乏组(n=121), 未发生癌因性疲乏的患者纳为无疲乏组(n=61)。

2.3 疲乏组、无疲乏组的生存质量、睡眠质量对比

疲乏组 FACT-L 评分(2.16±0.27)分低于无疲乏组(3.43±0.22)分, PSQI 评分(17.43±3.34)分高于无疲乏组(10.43±2.12)分($P<0.05$), 见表 1。

表 1 疲乏组、无疲乏组的生存质量、睡眠质量对比($\bar{x} \pm s$, 分)

Table 1 Comparison of quality of life and sleep quality between fatigue group and non fatigue group($\bar{x} \pm s$, score)

Groups	FACT-L	PSQI
Non fatigue group(n=61)	3.43± 0.22	10.43± 2.12
Fatigue group(n=121)	2.16± 0.27	17.43± 3.34
t	31.788	14.913
P	0.000	0.000

2.4 肺癌化疗患者癌因性疲乏与生存质量、睡眠质量的关系

经 Pearson 相关性分析可得: RPFS 评分与 FACT-L 评分呈负相关关系($r=-0.439, P=0.000$), 而与 PSQI 评分呈正相关关系

($r=0.482, P=0.000$)。

2.5 肺癌化疗患者癌因性疲乏影响因素的单因素分析

无疲乏组与疲乏组患者在家庭月收入、白细胞计数、文化

程度、血红蛋白、临床分期、白蛋白、化疗次数方面比较差异有统计学意义($P<0.05$),无疲乏组与疲乏组患者在病理类型、婚姻状况、年龄、性别、肌酐方面比较差异无统计学意义($P>0.05$),见表 2。

表 2 肺癌化疗患者癌因性疲乏影响因素的单因素分析
Table 2 Univariate analysis of influencing factors of cancer-related fatigue in lung cancer patients undergoing chemotherapy

Factors	Non fatigue group(n=61)	Fatigue group(n=121)	t/x ²	P
Age(years)	57.43± 6.12	57.98± 5.27	0.629	0.530
Gender				
Male	31(50.82)	63(52.07)	0.025	0.874
Female	30(49.18)	58(47.93)		
Marital status				
Married	37(60.66)	72(59.50)	0.022	0.881
Unmarried / divorced / widowed	24(39.34)	49(40.50)		
Family monthly income (yuan)				
<3000	12(19.67)	39(32.23)	10.083	0.006
3000~8000	23(37.70)	57(47.11)		
>8000	26(42.62)	25(20.66)		
Education level				
Junior high school and below	28(45.90)	78(64.46)	5.745	0.017
Senior high school or technical secondary school or above	33(54.10)	43(35.54)		
Clinical stage				
I ~ II stage	27(44.26)	31(25.62)	6.491	0.011
III~IV stage	34(55.74)	90(74.38)		
Pathological type				
Adenocarcinoma	32(52.46)	67(55.37)	0.139	0.710
Non adenocarcinoma	29(47.54)	54(44.63)		
Chemotherapy frequency (times)				
1~2	37(60.66)	38(31.40)	14.322	0.000
>2	24(39.34)	83(68.60)		
White blood cell count (× 10 ⁹ /L)	7.32± 1.12	5.26± 1.26	10.796	0.000
Hemoglobin(g/L)	127.31± 9.83	83.59± 14.02	21.791	0.000
Albumin(g/L)	37.68± 3.34	31.89± 2.42	13.355	0.000
Creatinine(μmol/L)	86.32± 6.27	86.63± 5.23	0.353	0.725

2.6 肺癌化疗患者癌因性疲乏影响因素的多因素 Logistic 回归分析

以 RPFS 评分为因变量(原值输入),家庭月收入、白细胞计数、文化程度、血红蛋白、临床分期、白蛋白、化疗次数为自变量(家庭月收入<3000元=1、家庭月收入3000~8000元=2、家庭月收入>8000元=0,文化程度初中及以下=1、高中或中专

及以上=0,临床分期III~IV期=1、I~II期=0,化疗次数>2次=1、化疗次数1~2次=0,白细胞计数、血红蛋白、白蛋白均为原值输入),多因素 Logistic 回归分析显示家庭月收入、白细胞计数、文化程度、血红蛋白、临床分期、白蛋白、化疗次数均为肺癌化疗患者癌因性疲乏的影响因素($P<0.05$)。见表 3。

表 3 肺癌化疗患者癌因性疲乏影响因素的多因素 Logistic 回归分析

Table 3 Multivariate Logistic regression analysis on influencing factors of cancer-related fatigue in lung cancer patients undergoing chemotherapy

Variable	β	SE	Wald χ^2	OR	P	95% confidence interval
Family monthly income	0.915	0.386	5.481	0.388	0.020	0.238~0.894
Education level	0.836	0.316	4.356	0.367	0.024	0.186~0.765
Clinical stage	1.582	0.586	7.134	1.284	0.009	1.117~2.058
Chemotherapy frequency	1.635	0.523	8.342	2.681	0.003	1.984~3.447
White blood cell count	0.283	0.124	5.498	0.823	0.013	0.689~1.248
Hemoglobin	0.036	0.014	5.927	0.861	0.011	0.713~1.387
Albumin	1.218	0.476	9.117	1.327	0.000	1.205~2.174

3 讨论

癌因性疲乏是一种通过患者个人的努力并不能使其得到缓解的症状,同时还可使机体感受到持久的、主观的疲劳感^[12-14],继而出现活动无耐力、注意力不集中、虚弱、兴趣减少等症状,常导致患者产生较严重的心理压力,甚至对患者正常睡眠造成影响,生存质量明显下降^[15-17]。由于肺癌患者长期处于恶性的身心刺激状态中,临床上癌因性疲乏发生几率较高;加上化疗在杀灭肿瘤细胞的同时,还可对患者的正常脑细胞造成一定程度的损害,对其认知功能产生伤害,进一步加重患者的疲乏感^[18,19]。目前,癌因性疲乏已成为临床上影响癌症患者健康状况的重要因素之一。而有关癌因性疲乏与生存质量、睡眠质量的关系及其影响因素仍不十分清楚,本研究就此展开分析。

本次研究结果显示,182例肺癌化疗患者中,发生癌因性疲乏121例,癌因性疲乏发生率为66.48%。这与既往研究的癌因性疲乏发生率相接近,可见肺癌化疗患者中的癌因性疲乏发生率普遍较高^[20]。同时疲乏组FACT-L评分低于无疲乏组,PSQI评分高于无疲乏组,且RPFS评分与FACT-L评分呈负相关关系,而与PSQI评分呈正相关关系。提示肺癌化疗患者的生存质量、睡眠质量均较差,且其睡眠质量、生存质量与癌因性疲乏存在一定相关性。考虑到主要是因为癌因性疲乏患者会导致患者自我控制感觉及日常活动能力下降,负面情绪极易产生,这些负面情绪又可引起患者失眠、迟迟无法入睡或睡眠程度浅等症^[21-23]。睡眠质量不好,一方面影响了患者体力的恢复,降低患者参与日常生活的积极性;另一方面还会影响大脑细胞间新的突触联系建立,降低患者记忆力、注意力等。长此以往形成恶性循环^[24,25]。这也提示在临床工作中,应该密切关注患者的睡眠情况,同时加强患者营养支持。此外,本研究结果还显示,家庭月收入、白细胞计数、文化程度、血红蛋白、临床分期、白蛋白、化疗次数均为肺癌化疗患者癌因性疲乏的影响因素。有学者研究结果显示^[26],文化程度是肺癌化疗患者发生癌因性疲乏的危险因素之一。这与本研究部分结果一致,可能是因为文化程度较低的患者接受能力、知识储备量均较低,对肺癌疾病的相关知识了解很少,容易对自身疾病状况产生较大的恐惧感,故癌因性疲乏的发生概率增加^[27,28];临床分期越高的患者,其病情程度越严重,易导致疲乏的发生;家庭月收入低的患者在承担疾病痛苦的同时还要承受经济、心理上的压力,家庭收入较

高的患者相对来说有更多、更好的治疗选择,故疲乏发生风险会降低^[29];化疗次数的增加表明患者使用的化疗药物也更多,化疗药物可导致机体免疫功能下降,增加不良副作用,使患者疲乏程度加深;白细胞计数的降低提示机体处于低免疫身体状态,白蛋白、血红蛋白的降低则提示机体处于贫血状态,而机体免疫功能下降易受感染,贫血易导致患者出现乏力、头晕、疲劳等症状,均可促使机体疲乏感增加^[30]。临床工作中,可考虑针对上述影响因素给予患者有效的干预,以改善患者预后。值得注意的是,本研究纳入的样本量较小,因此数据的准确性尚有提升空间,今后应加大样本量就行深入研究。

综上所述,肺癌化疗患者癌因性疲乏地产生受多种因素的影响,且患者癌因性疲乏越严重,其睡眠质量和生存质量越差,临床实际中应尽可能针对癌因性疲乏的影响因素对患者进行干预。

参考文献(References)

- [1] Zhao Z, Bai H, Duan J, et al. Recommendations of individualized medical treatment and common adverse events management for lung cancer patients during the outbreak of COVID-19 epidemic [J]. Thorax Cancer, 2020, 11(6): 1752-1757
- [2] 陈小波, 黄云超, 赵杰, 等. 宣威地区与非宣威地区肺癌患者临床流行病学特征及病理类型特点分析 [J]. 现代肿瘤医学, 2020, 28(15): 2617-2621
- [3] Noronha V, Patil VM, Joshi A, et al. Gefitinib Versus Gefitinib Plus Pemetrexed and Carboplatin Chemotherapy in EGFR-Mutated Lung Cancer[J]. J Clin Oncol, 2020, 38(2): 124-136
- [4] Hosomi Y, Morita S, Sugawara S, et al. Gefitinib Alone Versus Gefitinib Plus Chemotherapy for Non-Small-Cell Lung Cancer With Mutated Epidermal Growth Factor Receptor: NEJ009 Study [J]. J Clin Oncol, 2020, 38(2): 115-123
- [5] Wang Z, Li S, Wu L, et al. Effect of acupuncture on lung cancer-related fatigue: study protocol for a multi-center randomized controlled trial[J]. Trials, 2019, 20(1): 625
- [6] Kim KI, Kong M, Lee SH, et al. The efficacy and safety of Kyung-Ok-Ko on cancer-related fatigue in lung cancer patients: Study protocol for a randomized, patients-assessor blind, placebo-controlled, parallel-group, single-center trial [J]. Medicine (Baltimore), 2019, 98(44): e17717
- [7] 陈伟丽, 褚卡, 傅淑兰. 肺癌患者癌因性疲乏的调查及其影响因素

- 分析[J]. 中国基层医药, 2020, 27(18): 2211-2214
- [8] 王丽. 中国原发性肺癌诊疗规范(2015年版)解读[J]. 世界临床药物, 2016, 37(7): 433-436
- [9] 王思远, 高敏, 赵岳. 中文版慢性病治疗功能评估-疲劳量表在维持性血液透析患者中的信效度评定 [J]. 中华护理杂志, 2014, 49(5): 613-617
- [10] 李艳, 徐象威, 朱佩祯, 等. 肺癌化疗患者癌因性疲乏影响因素及其与生存质量相关性分析[J]. 浙江医学, 2020, 42(4): 361-364
- [11] Kwon CY, Lee B, Kim KI, et al. Herbal medicine on cancer-related fatigue of lung cancer survivors: Protocol for a systematic review[J]. *Medicine (Baltimore)*, 2020, 99(5): e18968
- [12] Yue H, Zhou S, Wu H, et al. Efficacy and safety of electro-acupuncture (EA) on insomnia in patients with lung cancer: study protocol of a randomized controlled trial[J]. *Trials*, 2020, 21(1): 788
- [13] Liu L, He X, Feng L. Exercise on quality of life and cancer-related fatigue for lymphoma survivors: a systematic review and meta-analysis [J]. *Support Care Cancer*, 2019, 27(11): 4069-4082
- [14] Henshall C, Davey Z. Development of an app for lung cancer survivors (iEXHALE) to increase exercise activity and improve symptoms of fatigue, breathlessness and depression [J]. *Psychooncology*, 2020, 29(1): 139-147
- [15] Feng LR, Regan J, Shrader JA, et al. Cognitive and motor aspects of cancer-related fatigue[J]. *Cancer Med*, 2019, 8(13): 5840-5849
- [16] O'Regan P, McCarthy G, O'Reilly S, et al. Cancer-related fatigue and self-care agency: A multicentre survey of patients receiving chemotherapy[J]. *J Clin Nurs*, 2019, 28(23-24): 4424-4433
- [17] Fernandez C, Firdous S, Jehangir W, et al. Cancer-Related Fatigue: Perception of Effort or Task Failure? [J]. *Am J Hosp Palliat Care*, 2020, 37(1): 34-40
- [18] 罗晶晶, 洪乔军, 周道平, 等. 肺癌患者生活质量调查及化疗期间发生抑郁的影响因素分析 [J]. 现代生物医学进展, 2020, 20(13): 2512-2515
- [19] Weiss JM, Csoszi T, Maglakelidze M, et al. Myelopreservation with the CDK4/6 inhibitor trilaciclib in patients with small-cell lung cancer receiving first-line chemotherapy: a phase Ib/randomized phase II trial[J]. *Ann Oncol*, 2019, 30(10): 1613-1621
- [20] 曹丹, 杨薇, 罗文燕, 等. 肺癌化疗患者癌因性疲乏的调查分析[J]. 解放军医药杂志, 2018, 30(9): 16-19
- [21] Sharour LA. Cancer-Related Fatigue, Laboratory Markers as Indicators for Nutritional Status among Patients with Colorectal Cancer[J]. *Nutr Cancer*, 2020, 72(6): 903-908
- [22] Abu-Taha OM, Al Qadire MI, Maharmeh M, et al. Assessment of cancer-related fatigue among Jordanian patients: a cross-sectional survey[J]. *Br J Nurs*, 2020, 29(2): 111-117
- [23] Huang J, Han Y, Wei J, et al. The effectiveness of the Internet-based self-management program for cancer-related fatigue patients: a systematic review and meta-analysis [J]. *Clin Rehabil*, 2020, 34 (3): 287-298
- [24] Chen HM, Cheung DST, Lin YY, et al. Relationships of exercise timing with sleep, fatigue and rest-activity rhythms of lung cancer patients in Taiwan: An exploratory study [J]. *Eur J Cancer Care (Engl)*, 2020, 29(4): e13233
- [25] Junior PNA, Barreto CMN, de Iracema Gomes Cubero D, et al. The efficacy of placebo for the treatment of cancer-related fatigue: a systematic review and meta-analysis [J]. *Support Care Cancer*, 2020, 28 (4): 1755-1764
- [26] 陈雯微. 肺癌患者癌因性疲乏的影响因素及其与生活质量的相关性分析[J]. 中国公共卫生管理, 2019, 35(2): 217-219, 229
- [27] VAN Vulpen JK, Sweegers MG, Peeters PHM, et al. Moderators of Exercise Effects on Cancer-related Fatigue: A Meta-analysis of Individual Patient Data[J]. *Med Sci Sports Exerc*, 2020, 52(2): 303-314
- [28] Xu A, Wang Y, Wu X. Effectiveness of e-health based self-management to improve cancer-related fatigue, self-efficacy and quality of life in cancer patients: Systematic review and meta-analysis[J]. *J Adv Nurs*, 2019, 75(12): 3434-3447
- [29] 吴琼, 高美玲. 肺癌患者化学治疗期间营养不良发生情况及相关影响因素分析[J]. 临床误诊误治, 2020, 33(8): 91-96
- [30] Li LY, Wang H, Chen X, et al. First-line atezolizumab plus chemotherapy in treatment of extensive small cell lung cancer: a cost-effectiveness analysis from China [J]. *Chin Med J (Engl)*, 2019, 132(23): 2790-2794