

老年重症肺炎有创机械通气患者营养不良与谵妄的发生相关

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【摘要】目的 探讨老年重症肺炎有创机械通气患者营养不良与发生谵妄的关系及其对预后的影响。**方法** 采用前瞻性观察性研究方法,选择 2021 年 1 月至 2022 年 12 月连云港市第二人民医院重症医学科收治的年龄 ≥ 60 周岁的重症肺炎有创机械通气患者为研究对象。采用谵妄评估法(CAM)对重症监护病房(ICU)住院患者进行谵妄评估,CAM 评分 ≥ 1 分定义为谵妄;采用简易微型营养评估量表(MNA-SF)对患者进行营养评估,MNA-SF 评分 ≤ 7 分定义为营养不良。根据患者是否发生谵妄分为谵妄组和非谵妄组,比较两组临床指标、ICU 住院时间、机械通气时间及停药后唤醒时间的差异。经 28 d 短期随访将患者分为死亡组和生存组,比较两组谵妄及营养不良发生率的差异。通过二元多因素 Logistic 回归分析筛选老年重症肺炎有创机械通气患者发生谵妄的危险因素;采用 Kaplan-Meier 生存曲线分析谵妄对预后的影响。**结果** 共纳入 132 例老年重症肺炎有创机械通气患者,其中 28 d 生存 98 例,死亡 34 例,病死率为 25.76%。死亡组患者营养不良及谵妄发生率均显著高于生存组(61.76% 比 37.76%, 64.71% 比 26.53%,均 $P < 0.05$),MNA-SF 评分明显低于生存组(分: 6.32 ± 1.80 比 8.72 ± 2.23 , $P < 0.01$),降钙素原(PCT)、白细胞介素-6(IL-6)、血乳酸(Lac)均明显高于生存组[PCT($\mu\text{g/L}$): $4.47(2.69, 10.39)$ 比 $2.77(1.28, 5.94)$, IL-6(ng/L): $204.08(126.12, 509.85)$ 比 $120.46(60.67, 290.99)$, Lac(mmol/L): $5.14(2.75, 8.60)$ 比 $3.13(2.16, 4.30)$,均 $P < 0.05$],停药后唤醒时间也较生存组明显延长(min: 33.94 ± 8.51 比 28.92 ± 7.03 , $P < 0.01$)。132 例老年重症肺炎有创机械通气患者中,有 48 例在 ICU 住院期间发生谵妄,84 例未发生谵妄,谵妄发生率为 36.36%。谵妄组患者 28 d 病死率显著高于非谵妄组(45.83% 比 14.29%, $P < 0.01$),MNA-SF 评分显著低于非谵妄组(分: 6.46 ± 1.77 比 9.05 ± 2.15 , $P < 0.01$),ICU 住院时间、机械通气时间、停药后唤醒时间也较非谵妄组显著延长[ICU 住院时间(d): 13.40 ± 9.59 比 10.06 ± 7.81 ,机械通气时间(h): 197.06 ± 89.80 比 138.81 ± 82.30 ,停药后唤醒时间(min): 35.85 ± 7.01 比 26.99 ± 6.12 ,均 $P < 0.05$]。二元多因素 Logistic 回归分析显示,营养不良[优势比(OR)=7.527,95% 可信区间(95%CI)为 2.585 ~ 21.917]、Lac(OR=5.345,95%CI 为 1.733 ~ 16.483)、停药后唤醒时间(OR=6.653,95%CI 为 2.021 ~ 21.904)是老年重症肺炎有创机械通气患者 ICU 住院期间发生谵妄的独立危险因素(均 $P < 0.01$)。Kaplan-Meier 生存曲线分析显示,谵妄组患者 28 d 累积生存率明显低于非谵妄组(54.17% 比 85.71%),差异有统计学意义(Log-Rank 检验: $\chi^2 = 16.780$, $P < 0.001$)。**结论** 老年重症肺炎有创机械通气患者 ICU 住院期间发生谵妄的危险因素包括营养不良、Lac 及停药后唤醒时间;谵妄的发生与不良预后密切相关。

【关键词】 重症肺炎; 机械通气; 谵妄; 营养不良; 预后

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Correlation between malnutrition and delirium in elderly patients with severe pneumonia undergoing invasive mechanical ventilation

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【Abstract】 Objective To investigate the relationship between malnutrition and delirium and its effect on prognosis in elderly patients with severe pneumonia undergoing invasive mechanical ventilation. **Methods** A prospective observational study was conducted. Patients with severe pneumonia aged ≥ 60 years old who underwent invasive mechanical ventilation admitted to department of critical care medicine of the Second People's Hospital of Lianyungang from January 2021 to December 2022 were enrolled. The confusion assessment method (CAM) was used to evaluate the delirium of the patients in intensive care unit (ICU). The score of CAM ≥ 1 was defined as delirium. Mini nutritional assessment short-form (MNA-SF) was used to assess the nutritional status of patients, and MNA-SF score ≤ 7 was defined as malnutrition. Patients were divided into delirium group and non-delirium group according to whether delirium occurred. The differences in clinical indicators, length of ICU stay, duration of mechanical ventilation and wake-up time after drug withdrawal were compared between the two groups. After 28 days of short-term follow-up, the patients were

divided into death group and survival group, and the differences in the incidence of delirium and malnutrition between the two groups were compared. Binary multivariate Logistic regression analysis was used to screen the risk factors for delirium in elderly patients with severe pneumonia undergoing invasive mechanical ventilation. Kaplan-Meier survival curve was used to analyze the effect of delirium on prognosis. **Results** A total of 132 elderly patients with severe pneumonia undergoing invasive mechanical ventilation were enrolled, of whom 98 survived and 34 died within 28 days, with a mortality of 25.76%. The incidence of malnutrition and delirium in the death group was significantly higher than that in the survival group (61.76% vs. 37.76%, 64.71% vs. 26.53%, both $P < 0.05$), and the MNA-SF score was significantly lower than that in the survival group (6.32 ± 1.80 vs. 8.72 ± 2.23 , $P < 0.01$). Procalcitonin (PCT), interleukin-6 (IL-6) and blood lactic acid (Lac) in the death group were significantly higher than those in the survival group [PCT ($\mu\text{g/L}$): 4.47 (2.69, 10.39) vs. 2.77 (1.28, 5.94), IL-6 (ng/L): 204.08 (126.12, 509.85) vs. 120.46 (60.67, 290.99), Lac (mmol/L): 5.14 (2.75, 8.60) vs. 3.13 (2.16, 4.30), all $P < 0.05$], and the wake-up time after drug withdrawal was significantly longer than that in the survival group (minutes: 33.94 ± 8.51 vs. 28.92 ± 7.03 , $P < 0.01$). Among 132 elderly patients with severe pneumonia undergoing invasive mechanical ventilation, 48 patients had delirium during ICU stay, and 84 patients did not have delirium. The incidence of delirium was 36.36%. The 28-day mortality in the delirium group was significantly higher than that in the non-delirium group (45.83% vs. 14.29%, $P < 0.01$), and the MNA-SF score was significantly lower than that in the non-delirium group (6.46 ± 1.77 vs. 9.05 ± 2.15 , $P < 0.01$), the length of ICU stay, duration of mechanical ventilation, and wake-up time after drug withdrawal were also significantly longer than those in the non-delirium group [length of ICU stay (days): 13.40 ± 9.59 vs. 10.06 ± 7.81 , duration of mechanical ventilation (hours): 197.06 ± 89.80 vs. 138.81 ± 82.30 , wake-up time after drug withdrawal (minutes): 35.85 ± 7.01 vs. 26.99 ± 6.12 , all $P < 0.05$]. Binary multivariate Logistic regression analysis showed that malnutrition [odds ratio (OR) = 7.527, 95% confidence interval (95%CI) was 2.585–21.917], Lac (OR = 5.345, 95%CI was 1.733–16.483), wake-up time after drug withdrawal (OR = 6.653, 95%CI was 2.021–21.904) were independent risk factors for delirium during ICU stay in elderly patients with severe pneumonia undergoing invasive mechanical ventilation (all $P < 0.01$). Kaplan-Meier survival analysis showed that the 28-day cumulative survival rate of patients in the delirium group was significantly lower than that in the non-delirium group (54.17% vs. 85.71%), and the difference was statistically significant (Log-Rank test: $\chi^2 = 16.780$, $P < 0.001$). **Conclusions** The risk factors for delirium in elderly patients with severe pneumonia undergoing invasive mechanical ventilation during ICU stay include malnutrition, Lac, and wake-up time after drug withdrawal. The occurrence of delirium is closely related to poor prognosis.

【Key words】 Severe pneumonia; Mechanical ventilation; Delirium; Malnutrition; Prognosis

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肺炎是威胁老年患者健康的重大临床问题。因老年患者往往存在呼吸系统防御功能减退、营养不良、免疫功能低下及多病共存等因素,因此老年肺炎容易发展成重症,病死率高达 30%~50%^[1-2]。重症肺炎患者因严重缺氧而需机械通气治疗,合适的镇痛镇静可缓解疼痛、恐惧,增强患者耐受性,有利于患者康复^[3]。研究显示,35%~80%的机械通气患者在住院期间出现谵妄^[4],从而对患者的认知功能造成严重影响^[5],使住院时间延长,病死率增加。既往研究提示,营养不良是老年患者发生谵妄的危险因素之一,而且与更长的重症监护病房(intensive care unit, ICU)住院时间及死亡风险增加相关^[6]。本研究拟探讨老年重症肺炎有创机械通气患者营养不良与谵妄的关系,以及谵妄对预后的影响。

1 资料与方法

1.1 研究设计:采用前瞻性观察性研究方法,选择 2021 年 1 月至 2022 年 12 月连云港市第二人民医院重症医学科收治的老年重症肺炎有创机械通气患者作为研究对象。本研究方案符合医学伦理学标准,通过了连云港市第二人民医院医学伦理委员会批准

(审批号:2022K009),所有治疗及检测均获得患者或家属的知情同意。

1.1.1 纳入标准:①年龄 ≥ 60 周岁;②重症肺炎符合 2019 年美国传染病学会/美国胸科学会发布的《成人社区获得性肺炎的诊断和治疗》中的诊断标准^[7];③机械通气时间 ≥ 48 h;④知情同意。

1.1.2 排除标准:①持续昏迷;②无创通气;③气管切开;④入院 24 h 内死亡或 ICU 住院时间 < 24 h;⑤合并急慢性神经系统疾病(脑出血、缺血性脑卒中、中枢神经系统感染、肝性脑病、严重精神疾病、缺氧性脑损伤、严重痴呆);⑥合并急性呼吸窘迫综合征。

1.2 研究分组:所有患者行经口气管插管机械通气后,均给予瑞芬太尼联合丙泊酚镇痛镇静治疗,采用谵妄评估法(confusion assessment method, CAM)进行谵妄评估,分为谵妄组和非谵妄组;采用简易微型营养评估量表(mini nutritional assessment scale-short form, MNA-SF)进行营养评估, MNA-SF 评分 ≤ 7 分定义为营养不良;经 28 d 短期随访,根据不同临床结局分为死亡组和生存组。

1.3 谵妄评估:使用 CAM 对 ICU 住院期间出现定向障碍或意识混乱、意识水平发生变化的患者进行急性谵妄发作的识别^[8]。CAM 评估基于 4 个方面,即急性发病和波动过程、意识水平改变、注意力不集中及思维紊乱;每项记 1 分,总分 ≥ 1 分即判定为谵妄。当患者无法言语表达时,使用 CAM-ICU 方法评估 CAM 的注意力不集中及思维紊乱部分。

1.4 数据收集与研究方法:通过医院电子病历系统收集患者临床资料,包括性别、年龄、ICU 住院时间、入 ICU 时营养状况和临床结局。入院 24 h 内,由接受过标准化培训的医务人员采用 MNA-SF 量表完成营养评估^[9],记录急性生理学与慢性健康状况评分 II (acute physiology and chronic health evaluation II, APACHE II),并检测血常规、肾功能、白细胞介素-6 (interleukin-6, IL-6)、降钙素原 (procalcitonin, PCT)、血乳酸 (blood lactic acid, Lac) 等指标。血液标本检测在连云港市第二人民医院检验科完成。机械通气使用 HAMILTON-C1 型呼吸机。所有数据双人录入并经逻辑检查,确保准确性和完整性。

1.5 镇静镇痛治疗:所有患者均给予抗感染治疗和有创机械通气,并根据病原学结果调整抗菌药物,呼吸机参数的调整参照血气分析结果,同时给予维持内环境稳定、营养支持、器官功能保护等治疗。所有患者均给予瑞芬太尼 + 丙泊酚的镇痛镇静治疗方案,其中瑞芬太尼以 $0.05 \mu\text{g} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ 的速度持续静脉泵入镇痛治疗;丙泊酚负荷剂量为 1 mg/kg ,之后以 $0.5 \text{ mg} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$ 的速度持续静脉泵入镇静治疗。根据患者血压、心率及疼痛行为量表 (behavior pain scale, BPS) 评分和 Richmond 躁动-镇静评分 (Richmond agitation and sedation scale, RASS)^[10] 结果调整瑞芬太尼及丙泊酚的剂量,镇痛目标为 BPS 评分维持在 3~5 分,镇静目标为 RASS 评分维持在 -2~1 分。

1.6 统计学分析:应用 SPSS 21.0 统计软件进行数据分析。计数资料组间比较采用 χ^2 检验。计量资料服从正态分布时以均数 \pm 标准差 ($\bar{x} \pm s$) 表示,采用 t 检验进行组间比较;非正态分布时以中位数 (四分位数) [$M(Q_L, Q_U)$] 表示,采用 Kruskal-Wallis 秩和检验进行组间比较。采用二元多因素 Logistic 回归法分析老年重症肺炎有创机械通气患者发生谵妄的危险因素;采用 Kaplan-Meier 生存曲线分析谵妄对预后的影响。检验水准 $\alpha = 0.05$, $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 生存组与死亡组患者临床资料比较(表 1):最终共纳入 132 例老年重症肺炎机械通气患者,其中 28 d 生存 98 例,死亡 34 例,28 d 病死率为 25.76%。两组患者男性比例、年龄、白细胞计数 (white blood cell count, WBC)、血小板计数 (platelet count, PLT)、血红蛋白 (hemoglobin, Hb)、估算肾小球滤过率 (estimated glomerular filtration rate, eGFR)、ICU 住院时间、机械通气时间差异无统计学意义 (均 $P > 0.05$);但死亡组患者 APACHE II 评分、营养不良和谵妄比例、PCT、IL-6 及 Lac 均明显高于生存组, MNA-SF 评分明显低于生存组,停药后唤醒时间也较生存组明显延长,差异均有统计学意义 (均 $P < 0.05$)。

表 1 不同 28 d 预后两组老年重症肺炎有创机械通气患者临床资料比较

指标	生存组 (n=98)	死亡组 (n=34)	$\chi^2/t/Z$ 值	P 值
男性 [例 (%)]	56 (57.14)	21 (61.76)	0.222	0.690
年龄 (岁, $\bar{x} \pm s$)	77.17 \pm 8.25	79.50 \pm 6.75	-1.480	0.141
APACHE II 评分 (分, $\bar{x} \pm s$)	25.53 \pm 7.79	30.32 \pm 6.55	-3.213	0.002
MNA-SF 评分 (分, $\bar{x} \pm s$)	8.72 \pm 2.23	6.32 \pm 1.80	5.667	<0.001
营养不良 [例 (%)]	37 (37.76)	21 (61.76)	5.907	0.017
谵妄 [例 (%)]	26 (26.53)	22 (64.71)	15.897	<0.001
WBC ($\times 10^9/\text{L}$, $\bar{x} \pm s$)	13.96 \pm 4.07	13.75 \pm 4.46	-0.838	0.404
PLT ($\times 10^9/\text{L}$, $\bar{x} \pm s$)	177.11 \pm 84.42	174.44 \pm 72.42	0.165	0.870
Hb (g/L, $\bar{x} \pm s$)	100.95 \pm 24.35	105.41 \pm 18.62	-0.974	0.332
PCT [$\mu\text{g/L}$, $M(Q_L, Q_U)$]	2.77 (1.28, 5.94)	4.47 (2.69, 10.39)	2.646	0.008
IL-6 [ng/L, $M(Q_L, Q_U)$]	120.46 (60.67, 290.99)	204.08 (126.12, 509.85)	2.565	0.010
Lac [mmol/L, $M(Q_L, Q_U)$]	3.13 (2.16, 4.30)	5.14 (2.75, 8.60)	3.312	0.001
eGFR (ml/min, $\bar{x} \pm s$)	78.51 \pm 21.62	70.69 \pm 25.86	1.727	0.087
ICU 住院时间 (d, $\bar{x} \pm s$)	11.64 \pm 9.32	10.21 \pm 6.14	0.837	0.404
机械通气时间 (h, $\bar{x} \pm s$)	152.60 \pm 84.69	181.29 \pm 99.75	-1.624	0.107
停药后唤醒时间 (min, $\bar{x} \pm s$)	28.92 \pm 7.03	33.94 \pm 8.51	-3.395	0.001

注: APACHE II 为急性生理学与慢性健康状况评分 II, MNA-SF 为简易微型营养评估量表, WBC 为白细胞计数, PLT 为血小板计数, Hb 为血红蛋白, PCT 为降钙素原, IL-6 为白细胞介素-6, Lac 为血乳酸, eGFR 为估算肾小球滤过率, ICU 为重症监护病房

2.2 谵妄组与非谵妄组患者临床资料比较(表 2):132 例老年重症肺炎有创机械通气患者中, ICU 住院期间发生谵妄 48 例, 发生率为 36.36%。谵妄组患者 28 d 病死率显著高于非谵妄组 ($P < 0.01$)。两组患者男性比例、年龄、APACHE II 评分、WBC、PLT、Hb 和 eGFR 差异均无统计学意义 (均 $P > 0.05$);但谵妄组患者 MNA-SF 评分显著低于非谵妄组, 营养不良比例、PCT、IL-6、Lac 显著高于非谵妄组, ICU 住院时间、机械通气时间、停药后唤醒时间也较非谵妄组明显延长, 差异均有统计学意义 (均 $P < 0.05$)。

表 2 ICU 住院期间是否发生谵妄两组老年重症肺炎有创机械通气患者临床资料比较

指标	非谵妄组 (n=84)	谵妄组 (n=48)	$\chi^2/t/Z$ 值	P 值
男性 [例(%)]	46 (54.76)	31 (64.58)	1.212	0.359
年龄 (岁, $\bar{x} \pm s$)	77.70 ± 7.96	77.90 ± 7.96	-0.134	0.893
28 d 病死率 [% (例)]	14.29 (12)	45.83 (22)	15.897	<0.001
APACHE II 评分 (分, $\bar{x} \pm s$)	27.08 ± 7.42	26.21 ± 8.36	0.622	0.535
MNA-SF 评分 (分, $\bar{x} \pm s$)	9.05 ± 2.15	6.46 ± 1.77	7.089	<0.001
营养不良 [例(%)]	20 (23.81)	38 (79.17)	38.000	<0.001
WBC ($\times 10^9/L$, $\bar{x} \pm s$)	13.13 ± 3.83	13.42 ± 4.72	-0.388	0.698
PLT ($\times 10^9/L$, $\bar{x} \pm s$)	180.06 ± 83.47	170.06 ± 77.62	0.679	0.499
Hb (g/L, $\bar{x} \pm s$)	103.71 ± 23.47	99.27 ± 22.19	1.067	0.288
PCT [$\mu g/L$, $M(Q_L, Q_U)$]	2.05 (1.12, 4.34)	5.94 (3.07, 11.47)	5.289	<0.001
IL-6 [ng/L, $M(Q_L, Q_U)$]	79.32 (50.63, 217.95)	268.65 (136.16, 525.55)	4.962	<0.001
Lac [mmol/L, $M(Q_L, Q_U)$]	2.54 (2.06, 3.65)	5.14 (3.27, 8.31)	5.606	<0.001
eGFR [mL/min, $M(Q_L, Q_U)$]	72.74 (64.62, 99.99)	71.74 (58.92, 85.75)	-1.954	0.051
ICU 住院时间 (d, $\bar{x} \pm s$)	10.06 ± 7.81	13.40 ± 9.59	-2.171	0.032
机械通气时间 (h, $\bar{x} \pm s$)	138.81 ± 82.30	197.06 ± 89.80	-3.784	<0.001
停药后唤醒时间 (min, $\bar{x} \pm s$)	26.99 ± 6.12	35.85 ± 7.01	-7.591	<0.001

注: ICU 为重症监护病房, APACHE II 为急性生理学及慢性健康状况评分 II, MNA-SF 为简易微型营养评估量表, WBC 为白细胞计数, PLT 为血小板计数, Hb 为血红蛋白, PCT 为降钙素原, IL-6 为白细胞介素-6, Lac 为血乳酸, eGFR 为估算肾小球滤过率

2.3 多因素 Logistic 回归分析(表 3~4): 组间比较结果提示, 营养不良、PCT、IL-6、Lac、ICU 住院时间、机械通气时间和停药后唤醒时间与谵妄的发生显著相关。以上述指标为自变量(X), 发生谵妄为因变量(Y), 发生为 1, 不发生为 0; 连续自变量以中位数为分界点, 转换为二分类变量, 赋值后进行二元多因素 Logistic 回归分析。结果显示, 营养不良、Lac 和停药后唤醒时间是老年重症肺炎有创机械通气患者 ICU 住院期间发生谵妄的独立危险因素(均 $P < 0.01$)。

表 3 老年重症肺炎有创机械通气患者 ICU 住院期间发生谵妄危险因素的多元多因素 Logistic 回归分析变量赋值

变量	赋值
谵妄 (Y)	不发生=0, 发生=1
PCT $\geq 3.13 \mu g/L (X_1)$	否=0, 是=1
IL-6 $\geq 160.73 \times 10^9/L (X_2)$	否=0, 是=1
Lac $\geq 3.15 \text{ mmol/L} (X_3)$	否=0, 是=1
ICU 住院时间 $\geq 8.50 \text{ d} (X_4)$	否=0, 是=1
机械通气时间 $\geq 135.00 \text{ h} (X_5)$	否=0, 是=1
停药后唤醒时间 $\geq 31.00 \text{ min} (X_6)$	否=0, 是=1
营养不良 (MNA-SF 评分 ≤ 7 分, X_7)	否=0, 是=1

注: ICU 为重症监护病房, PCT 为降钙素原, IL-6 为白细胞介素-6, Lac 为血乳酸, MNA-SF 为简易营养评估量表

表 4 老年重症肺炎有创机械通气患者 ICU 住院期间发生谵妄危险因素的多元多因素 Logistic 回归分析

自变量	β 值	s_e	χ^2 值	P 值	OR 值	95%CI
营养不良	2.018	0.545	13.701	<0.001	7.527	2.585 ~ 21.917
PCT	1.100	0.553	3.961	0.057	3.004	1.017 ~ 8.872
IL-6	1.114	0.547	4.144	0.052	3.047	1.042 ~ 8.910
Lac	1.676	0.575	8.509	0.004	5.345	1.733 ~ 16.483
ICU 住院时间	0.611	0.635	0.926	0.336	1.843	0.531 ~ 6.396
机械通气时间	-0.480	0.677	0.502	0.479	0.619	1.164 ~ 2.334
停药后唤醒时间	1.895	0.608	9.718	0.002	6.653	2.021 ~ 21.904

注: ICU 为重症监护病房, PCT 为降钙素原, IL-6 为白细胞介素-6, Lac 为血乳酸, OR 为优势比, 95%CI 为 95% 可信区间

2.4 老年重症肺炎有创机械通气患者 Kaplan-Meier 生存曲线分析(图 1): 谵妄组 48 例患者中 28 d 死亡 22 例, 生存期为 (22.56 ± 0.98) d; 非谵妄组 84 例患者中 28 d 死亡 12 例, 生存期为 (26.33 ± 0.50) d。谵妄组 28 d 短期累积生存率明显低于非谵妄组 (54.17% 比 85.71%), 差异有统计学意义 (Log-Rank 检验: $\chi^2 = 16.780, P < 0.001$)。

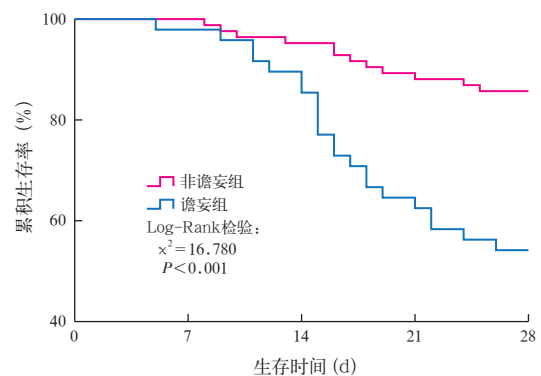


图 1 老年重症肺炎有创机械通气患者 28 d Kaplan-Meier 生存曲线

3 讨论

随着老年人口的增加, ICU 收治的老年患者比例也在增加。谵妄是一种以注意力不集中和意识错乱为特征的急性认知及意识障碍与波动^[11]。既往研究提示, ICU 老年患者谵妄发生率为 13% ~ 66%, 与 ICU 住院时间、机械通气时间延长及不良结局密切相关^[12]。Ely 等^[13]研究显示, 谵妄增加了 ICU 机械通气患者病死率。本研究中 ICU 老年重症肺炎有创机械通气患者谵妄发生率达 36.36%, 且谵妄组患者 28 d 病死率显著高于非谵妄组。既往研究提示, 老年机械通气患者镇静药物的使用与谵妄的发生相关, 且呈剂量依赖性^[14]。本研究显示, 谵妄组患者机械通气时间及停药后唤醒时间较非谵妄组更长, 提示 ICU 重症肺炎患者发生谵妄时, 需更长时间才能成功撤机。本研究中谵妄组患者炎症指标 PCT、IL-6

等均显著高于非谵妄组。目前有关谵妄发生的病理生理学机制尚不明确,但现有研究表明,全身炎症反应与 ICU 谵妄的发生相关^[15]。因此对于 ICU 重症肺炎患者,医护人员对谵妄的早期识别和干预可缩短机械通气时间及 ICU 住院时间,并改善预后。

本次在 ICU 60 岁以上重症肺炎有创机械通气患者中开展的研究表明,入院时合并营养不良会增加谵妄的发生风险,导致更长的 ICU 住院时间、机械通气时间和停药后唤醒时间,并增加患者死亡风险。老年人群常合并基础疾病,面临生理功能衰退,ICU 老年患者更容易合并衰弱、营养不良等综合征,这些原因均导致其预后更差^[16-17]。李艳艳等^[18]的研究提示,营养不良及多病共存是老年患者发生谵妄的危险因素,且与谵妄持续时间相关。本研究表明,营养不良一定程度上增加了谵妄对不良预后的影响,ICU 老年重症肺炎有创机械通气患者营养不良与谵妄的发生密切相关,且增加了病死率。既往研究提示,营养不良与危重患者不良临床结局密切相关^[19-20]。本研究中死亡组营养不良发生率显著高于生存组,谵妄组营养不良发生率亦明显高于非谵妄组,与上述研究结果一致。在本研究中,生存组与死亡组患者年龄差异无统计学意义,考虑与本研究入组患者均为 60 周岁以上人群且样本量较少相关。在本研究的老年患者中,营养不良人群发生谵妄的风险更大,住院时间更长,且临床预后更差。对于机械通气危重患者,营养干预可以缩短机械通气时间和 ICU 住院时间,从而改善预后^[21]。营养不良在 ICU 老年患者中很常见,应作为 ICU 患者的常规筛查项目。

综上,老年重症肺炎有创机械通气患者营养状况与谵妄的发生密切相关,共同影响疾病的临床转归,而营养不良是可改变的危险因素。因此,在 ICU 老年患者中进行早期营养筛查和干预可缩短 ICU 住院时间,减少谵妄的发生,降低病死率。本研究仍存在一定局限,如样本量较小,提示在今后的工作中,需要更大样本量的多中心前瞻性研究来确定可改变的危险因素,降低在 ICU 接受治疗的这一类人群发生谵妄等不良事件的风险,并探索营养不良对老年重症肺炎患者长期预后和功能结局的影响,如出院 12 个月后认知功能、生活质量及长期病死率等。

利益冲突 所有作者均声明不存在利益冲突

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