·临床研究·

老年坠积性肺炎多重耐药菌感染相关因素分析

谢朝云[1*],李耀福[1],熊芸[1],蒙桂鸾[1],杨怀[2],杨忠玲[3]
(贵州医科大学第三附属医院:[1]感染管理科,[3]检验科,都匀 558000;[2]贵州省人民医院感染管理科,贵阳 550002)

【摘 要】 目的 分析老年坠积性肺炎患者多重耐药菌(MDRB)感染的相关危险因素,为临床诊治提供参考。**方法** 回顾性分析2012年2月至2018年7月贵州医科大学第三附属医院老年住院坠积性肺炎患者622例,根据是否从其临床感染标本中分离出MDRB菌株,分为MDRB组与非MDRB组,对MDRB感染的相关危险因素进行分析。应用SPSS 20.0统计软件对数据进行分析。组间比较用χ^2检验。单因素和多因素logistic回归分析MDRB感染的危险因素。**结果** 老年坠积性肺炎MDRB感染率34.43%(167/485)。单因素分析显示年龄(>70岁)、慢性肺部感染史、慢性心脑血管病病史、糖尿病病史、病程(>15 d)、急性生理学及慢性健康状况评分系统Ⅱ(APACHEⅡ)评分>20分、昏迷、吸烟史、抗菌药物使用时间(>7 d)、抗菌药物使用种类(≥3种)、血糖(≥11.1 mmol/L)等是老年坠积性肺炎MDRB感染的危险因素($P<0.05$),而半坐卧位、雾化吸入与口腔护理是感染保护因素($P<0.05$)。logistic回归分析显示慢性肺部感染史($OR=3.472$, 95%CI 1.866~6.461; $P=0.000$)与联合使用抗菌药物(≥3种)($OR=3.760$, 95%CI 1.775~7.968; $P=0.038$)是老年坠积性肺炎MDRB感染的独立危险因素,雾化吸入($OR=0.624$, 95%CI 0.400~0.974; $P=0.000$)与口腔护理($OR=0.256$, 95%CI 0.161~0.408; $P=0.001$)是老年坠积性肺炎MDRB感染的保护因素。**结论** 老年坠积性肺炎MDRB感染与多种因素相关,临床应重点关注慢性肺部感染患者,合理使用抗菌药物,同时做好口腔护理,采取雾化吸入排痰等综合措施可减少MDRB感染。

【关键词】 老年;坠积性肺炎;多重耐药菌
【中图分类号】 R563 **【文献标志码】** A **【DOI】** 10.11915/j.issn.1671-5403.2018.12.207

Related factors of multiple drug resistant infection in aged patients with hypostatic pneumonia: analysis of 622 cases

XIE Zhao-Yun[1*], LI Yao-Fu[1], XIONG Yun[1], MENG Gui-Luan[1], YANG Huai[2], YANG Zhong-Ling[3]
([1]Department of Infection Control, [3]Department of Clinical Laboratory, the Third Affiliated Hospital of Guizhou Medical University, Duyun 558000, China; [2]Department of Infection Control, Guizhou Provincial People's Hospital, Guiyang 550002, China)

【Abstract】 Objective To analyze the risk factors of multiple drug resistant bacteria (MDRB) infection in the elderly patients with hypostatic pneumonia in order to provide reference for clinical diagnosis and treatment. **Methods** A retrospective analysis was carried out on 622 elderly hospitalized patients with pendulous pneumonia admitted in the Third Affiliated Hospital of Guizhou Medical University from February 2012 to July 2018. According to whether the strains of MDRB were isolated from their clinical infection specimens, they were divided into MDRB group and non-MDRB group. SPSS statistics 20.0 was used to perform the statistical analysis. Chi-square test was employed for intergroup comparison. The risk factors of MDRB infection were analyzed with univariate and multivariate logistic regression analyses. **Results** The infection rate of MDRB was 34.43% (167/485). Univariate analysis showed that age (>70 years), history of chronic pulmonary infection, history of chronic cardio-cerebrovascular disease, history of diabetes mellitus, course of disease (>15 d), APACHE Ⅱ score >20, coma, smoking history, and time of antibiotic usage (>7 d), types of applied antibiotics (≥3) and blood glucose (≥11.1 mmol/L) were the risk factors of MDRB infection in the elderly ($P<0.05$). Semi-sitting position, aerosol inhalation and oral nursing were the protective factors of the infection ($P<0.05$). Logistic regression analysis presented that the history of chronic pulmonary infection ($OR=3.472$, 95%CI 1.866-6.461; $P=0.000$) and combined use of antimicrobial agents (≥3) ($OR=3.760$, 95%CI 1.775-7.968; $P=0.038$) were independent risk factors for MDRB infection. Aerosol inhalation ($OR=0.624$, 95%CI0.400-0.974; $P=0.000$) and oral care ($OR=0.256$, 95%CI 0.161-0.408; $P=0.001$) were the protective

收稿日期:2018-09-22;**修回日期**:2018-10-18
基金项目:贵州省科技厅联合项目{黔科合LH字[2014]7162号};{贵州省黔南州社会发展科技项目黔南科合社字[2013]20号}
通信作者:谢朝云,E-mail:xcu2009@163.com

factors of MDRB infection in the aged patients with pendulous pneumonia. **Conclusion** MDRB infection in elderly patients with pendulous pneumonia is related to many factors. Clinical attention should be paid to these patients, and rational use of antimicrobial agents, oral care and comprehensive measures such as aerosol inhalation and sputum drainage can reduce the infection of MDRB.

【Key words】 aged; hypostatic pneumonia; multiple drug resistant bacterium

This work was supported by the Joint Project of Guizhou Provincial Department of Science and Technology (LH-2014-7162) *and the Project of Social Development Science and Technology of Qiannan Zhou of Guizhou Province* (2013-20).

Corresponding author: *XIE Zhao-Yun*, *E-mail*: *xcu2009@163.com*

坠积性肺炎是老年住院患者常见呼吸道并发症之一,由于感染时间长,反复发作,长期反复使用抗菌药物,因此多重耐药菌(multiple drug resistant bacterium,MDRB)检出增多,感染病原菌耐药性高,治疗效果差[1],是老年重症患者直接与间接死亡的重要原因。研究显示坠积性肺炎病死率达33%~70%[2]。MDRB 是对≥3 类抗菌药物获得性耐药的病原菌,老年坠积性肺炎患者 MDRB 感染已成为临床日渐突出的问题[3],但感染相关因素的临床研究目前较少。为此,我们对老年坠积性肺炎患者 MDRB 感染的影响因素进行了分析,以期为临床防治提供参考。

1 对象与方法

1.1 研究对象

回顾性分析 2012 年 2 月至 2018 年 7 月贵州医科大学第三附属医院老年住院坠积性肺炎患者 622 例,其中男性 387 例,女性 235 例,年龄 61~93(71.59±7.75)岁。根据是否从其临床感染标本中分离出 MDRB 菌株,分为 MDRB 组与非 MDRB 组。MDRB 菌株包括耐甲氧西林表皮葡萄球菌(methicillin resistant *staphylococcus* epidermidis,MRSE)、耐甲氧西林金黄色葡萄球菌(methicillin resistant *staphylococcus* aureus,MRSA)、产超广谱 β-内酰胺酶(extended spectrum beta-lactamases,ESBLs)肠杆菌科细菌、耐万古霉素肠球菌(vancomycin resistant *enterococci*,VRE)、耐碳青霉烯类抗菌药物肠杆菌科菌(carbapenem resistant *enterobacteriaceae*,CRE)、耐碳青霉烯类抗菌药物鲍氏不动杆菌(carbapenem resistant acinetobacter *baumannii*,CR-AB)、多重耐药/泛耐药铜绿假单胞菌(multidrug resistant/pan-drug resistant *pseudomonas aeruginosa*,MDR/PDR-PA)。排除标准:未采集标本送细菌培养与药敏试验或标本采集不正确;临床病历资料未记录或记录不详。

1.2 诊断标准

老年坠积性肺炎诊断标准:老年住院患者(年龄>60 岁)住院期间出现频繁咳嗽,气促,痰多(每天>30 ml),呼吸困难加重,肺部闻及干湿性啰音。体温>38℃,外周血白细胞增多,中性粒细胞比例增高,降钙素原水平升高。胸片或肺部 CT 检查有炎性改变,排除其他肺部疾病可诊断为坠积性肺炎[4]。

1.3 方法

逐一记录每位患者的年龄、性别、既往病史和现病史、吸烟史、急性生理学及慢性健康状况评分系统(acute physiology and chronic health evaluation scoring system Ⅱ,APACHE Ⅱ)评分、抗菌药物使用情况、检验结果等。所有患者均在纤维支气管镜下,用无菌方法采集肺内深部痰液,置于无菌容器中立即送验。送检的所有痰标本均通过镜检筛查,白细胞>25 个/低倍视野,鳞状上皮细胞<10 个/低倍视野,或鳞状上皮细胞与白细胞比例<1∶2.5,确定为合格痰标本,否则重新采集。合格痰标本按照《全国临床检验操作规程》(第 3 版)进行分离、培养、鉴定及药敏试验操作。应用 Phoenix-100 全自动细菌鉴定药敏系统鉴定菌株,药敏试验结果判断按照美国临床和实验室标准化协会(clinical and laboratory standards institute,CLSI)标准判断,质控菌株为大肠埃希菌 ATCC25922、肺炎克雷伯菌 ATCC700603、大肠埃希菌 ATCC35218。连续 2 次采集标本培养出相同菌株,且比例占优势的细菌视为致病菌。MDRB 参照国际专家建议进行判断[5]。

1.4 统计学处理

应用 SPSS 20.0 统计软件对数据进行分析。计数资料用例数(百分率)表示,组间比较用 χ^2 检验。单因素分析有统计学意义的因素带入 logistic 回归模型进行多因素分析。以 $P<0.05$ 为差异具有统计学意义。

2 结 果

2.1 老年坠积性肺炎感染病原菌分离情况

在 622 例老年坠积性肺炎患者深部痰标本中共分离出病原菌 485 株,其中革兰氏阳性球菌 121 株,占 24.95%,革兰氏阴性杆菌 343 株,占 70.72%,真菌 21 株,占 4.33%,具体结果见表 1。

表1 老年坠积性肺炎病原菌构成情况

Table 1 Constituent ratio of pathogenic bacteria in elderly patients with hypostatic pneumonia (n=485)

Pathogen	n(%)
Gram-positive cocci	121(24.95)
Staphylococcus aureus	65(13.40)
Suspected enzyme-negative staphylococci	47(9.69)
Streptococcus pneumoniae	9(1.86)
Gram-negative bacilli	343(70.72)
Escherichia coli	94(19.38)
Klebsiella pneumoniae	87(17.94)
Pseudomonas aeruginosa	88(18.14)
Acinetobacter baumannii	36(7.42)
Enterobacter cloacae	17(3.51)
Klebsiella pneumoniae	13(2.68)
Serratia marcescens	8(1.65)
Fungus	21(4.33)
Candida albicans	21(4.33)

2.2 老年坠积性肺炎患者MDRB菌株情况

在分离出的病原菌485株中,符合MDRB菌株167株,检出率34.43%(167/485)。其中ESBLs 84株(同为CRE 2株),占50.30%;MDR/PDR-PA 37株,占22.16%;MRSA 19株,占11.38%;MRSE 14株,占8.38%;CR-AB 13株,占7.78%;未检出VRE。在检出167株MDRB中26例为两株MDRB混合感染,故MDRB感染病例为141例。

2.3 MDRB危险因素的单因素分析

单因素分析显示年龄(>70岁)、慢性肺部感染、慢性心脑血管病、糖尿病、病程(>15 d)、APACHEⅡ评分>20分、昏迷、吸烟史、抗菌药物使用时间(>7 d)、抗菌药物使用种类(≥3种)、血糖(≥11.1 mmol/L)等是老年坠积性肺炎MDRB感染危险因素(P<0.05),而半坐卧位、雾化吸入与口腔护理是老年坠积性肺炎MDRB感染保护因素(P<0.05;表2)。

2.4 多因素logistic回归分析

以年龄、慢性肺部感染、慢性心脑血管病、糖尿病、病程、APACHEⅡ评分、昏迷、卧位、雾化吸入、口腔护理、抗菌药物使用时间、抗菌药物使用种数、血糖为自变量,是否MDRB感染为因变量,进行多因素logistic回归分析,结果显示慢性肺部感染与联合使用抗菌药物(≥3种)是老年坠积性肺炎MDRB感染的独立危险因素。雾化吸入与口腔护理是老年坠积性肺炎MDRB感染的独立保护因素(表3)。

3 讨 论

坠积性肺炎为老年患者的常见并发症,不仅增加患者及家庭经济负担,还直接影响预后,其感染病原菌也有特点。本研究得出的结果与章群等[6]报道的坠积性肺炎病原菌以革兰氏阴性菌为主相似,但革兰氏阴性菌70.72%(343/485),占比较高,各种病原菌构成比也不相同。随着大量广谱抗菌药物的应用,坠积性肺炎感染病原菌对常用抗菌药物的耐药性逐年上升,MDRB菌株也在增多,已成为防治坠积性肺炎的难题[7]。本研究显示老年坠积性肺炎MDRB感染率达34.43%(167/485),水平较高,其中ESBLs、MDR/PDR-PA、MRSA检出率较高[8],临床医师应根据老年坠积性肺炎MDRB感染的特点,早期痰液送病原学检查,应根据病原学与药敏结果选用抗菌药物治疗。

慢性肺部感染可使患者机体免疫功能下降,肺功能减退,呼吸运动减弱,支气管纤毛运动不力,气道内痰液排出困难,气道易梗阻,从而发生细菌繁殖[9]。袁侨英等[10]研究显示,慢性心血管疾病也可增加肺部感染,再加上慢性心肺疾病常反复发病,反复肺部感染又加重肺部炎性分泌物瘀积,从而使得感染难以控制,需多次联用抗菌药物,抗菌药物的诱导可使病原菌产生各种耐药基因和灭活酶,导致MDRB感染[11-14]。提高病原学送检率,根据细菌培养合理使用抗菌药物,可减少不合理联用抗菌药物,降低坠积性肺炎MDRB感染[15]。口腔内定植细菌较多,相当部分为MDRB,是坠积性肺炎感染病原菌重要来源之一,如果不及时清洁,口腔内病原菌异常增殖,易导致患者并发坠积性肺炎,口腔护理可清除口腔内致病菌,减少MDRB经口腔移位于下呼吸道,从而减少坠积性肺炎的发生[16]。痰液引流不畅也易并发坠积性肺炎,导致迁延难愈,反复发作,感染病原菌耐药性升高[17],雾化吸入可稀释痰液,使得黏稠度下降,利于痰液排出,减少MDRB感染[18]。本研究多因素logistic回归分析结果也表明慢性肺部感染与联合使用抗菌药物(≥3种)是老年坠积性肺炎MDRB感染的独立危险因素;雾化吸入与口腔护理是老年坠积性肺炎MDRB感染的独立保护因素。本研究不足之处在于,研究病例数较少,可比性和均一性存在不足,可能对结果影响较大,因此结论有待进一步大样本前瞻性多中心研究验证。

综上所述,老年坠积性肺炎MDRB感染与多因素相关,其中慢性肺部感染与联合使用抗菌药物≥3种是老年坠积性肺炎的主要危险因素,临床应重点关注慢性肺部感染患者,合理使用抗菌药物,同时做好口腔护理,采取雾化吸入排痰等为主的综合措施减少其MDRB感染。

表 2 单因素分析老年坠积性肺炎 MDRB 感染因素

Table 2 Univariate analysis of MDRB infection factors in elderly patients with pendulous pneumonia [n(%)]

Factor	MDRB group (n=141)	Non-MDRB group (n=481)	χ^2	P value
Age(years)			5.056	0.025
>70	74(52.48)	201(41.79)		
≤70	67(47.52)	280(58.21)		
Gender			1.084	0.298
Male	93(65.96)	294(61.12)		
Female	48(34.04)	187(38.88)		
Chronic pulmonary infection			21.390	0.000
Yes	38(26.95)	54(11.23)		
No	103(73.05)	427(88.77)		
Chronic cardiovascular and cerebrovascular disease			4.671	0.031
Yes	71(50.35)	193(40.12)		
No	70(49.65)	288(59.88)		
Diabetes mellitus			4.152	0.043
Yes	31(21.99)	71(14.76)		
No	110(78.01)	410(85.24)		
Course of disease(d)			7.247	0.007
>15	57(40.43)	137(28.48)		
≤15	84(59.57)	344(71.52)		
APACHE Ⅱ(score)			4.717	0.030
>20	60(42.55)	157(32.64)		
≤20	81(57.45)	324(67.36)		
Coma			4.548	0.033
Yes	21(14.89)	42(8.73)		
No	120(85.11)	439(91.27)		
Smoking			3.180	0.075
Yes	29(20.57)	69(14.35)		
No	112(79.43)	412(85.65)		
Decubitus			5.007	0.025
Semi-reclining position	34(24.11)	164(34.10)		
Supine position	107(75.89)	317(65.90)		
Get out of bed			3.181	0.075
Yes	56(39.72)	232(48.23)		
No	85(60.28)	249(51.77)		
Aerosol inhalation			12.847	0.000
Yes	42(29.79)	225(46.78)		
No	99(70.21)	256(53.22)		
Oral care			48.007	0.000
Yes	38(26.95)	289(60.08)		
No	103(73.05)	192(39.92)		
Length of antibacterial use(d)			8.622	0.003
>7	75(53.19)	189(39.29)		
≤7	66(46.81)	292(60.71)		
Type of antibacterial			24.977	0.000
≥3	65(46.10)	117(24.32)		
<3	76(53.90)	364(75.68)		
Level of serum albumin (g/L)			1.562	0.211
<30	24(17.02)	62(12.89)		
≥30	117(82.98)	419(87.11)		
Blood glucose(mmol/L)			7.761	0.005
≥11.1	32(22.70)	63(13.10)		
<11.1	109(77.30)	418(86.90)		
Incidence season			1.805	0.614
Spring	25(17.73)	101(21.00)		
Summer	53(37.59)	162(33.68)		
Autumn	48(34.04)	154(32.02)		
Winter	15(10.64)	64(13.30)		

MDRB: multiple drug resistant bacterium; APACHE: acute physiology and chronic health evaluation scoring system Ⅱ

表3 多因素 logistic 回归分析老年坠积性肺炎 MDRB 感染因素

Table 3 Multivariate logistic regression analysis of MDRB infection factors in elderly patients with pendulous pneumonia

Variable	*B*	*SE*	*Wald* χ^2	*OR*(95%*CI*)	*P* value
Chronic pulmonary infection	1.245	0.317	15.441	3.472(1.866-6.461)	0.000
Aerosol inhalation	−0.472	0.227	4.317	0.624(0.400−0.974)	0.038
Oral care	−1.361	0.236	33.171	0.256(0.161−0.408)	0.000
Applied antibiotics ≥3 types	1.324	0.383	11.950	3.760(1.775−7.968)	0.001

MDRB: multiple drug resistant bacterium

【参考文献】

[1] 孙媛. 利福平注射液联合丙种球蛋白治疗老年脑梗死伴坠积性肺炎35例[J]. 中国老年学杂志, 2013, 33(13): 3226-3227. DOI: 10.3969/j.issn.1005-92 02.2013.13.121.
Sun Y. Treatment of 35 cases of senile cerebral infarction with hypostatic pneumonia with rifampicin combined with gamma globulin[J]. Chin J Gerontol, 2013, 33(13): 3226-3227. DOI: 10.3969/j.issn.1005-9202.2013.13.121.

[2] 刘霞. 预防性护理干预对长期卧床患者坠积性肺炎发生的影响[J]. 实用临床医药杂志, 2016, 20(18): 32-34. DOI: 10.7619/jcmp.201618011.
Liu X. Effect of preventive nursing intervention on the incidence of hypostatic pneumonia in long term bedridden patients[J]. J Clin Med Prac, 2016, 20(18): 32-34. DOI: 10.7619/jcmp.201618011.

[3] 斯琴高娃, 王玲. 抗生素联合超短波治疗坠积性肺炎的临床观察[J]. 中国冶金工业医学杂志, 2018, 35(4): 444-445.
Siqin GW, Wang L. Clinical observation of antibiotic combined with ultrashort wave therapy for hypostatic pneumonia[J]. Chin Med J Metall Indus, 2018, 35(4): 444-445.

[4] 朱高尚, 张伟. 从"久卧伤气"探讨慢性阻塞性肺疾病合并坠积性肺炎发病机制[J]. 湖南中医药大学学报, 2017, 37(8): 845-847. DOI: 10.3969/j.issn.1674-070X.2017.08.008.
Zhu GS, Zhang W. Discussion on pathogenesis of chronic obstructive pulmonary disease complicated with hypostatic pneumonia from "Excessive Rest on Bed Impairing Qi"[J]. J Trad Chin Med Univ Hunan, 2017, 37(8): 845-847. DOI: 10.3969/j.issn.1674-070X.2017.08.008.

[5] 李春辉, 吴安华. MDR、XDR、PDR 多重耐药菌暂行标准定义——国际专家建议[J]. 中国感染控制杂志, 2014, 13(1): 62-64. DOI: 10.3969/j.issn.1671-9638.2014.01.018.
Li CH, Wu AH. Interim standard definition of MDR, XDR and PDR multiple drug resistant bacterium — international expert suggestions[J]. Chin J Infect Control, 2014, 13(1): 62-64. DOI: 10.3969/j.issn.1671-9638.2014.01.018.

[6] 章群, 朱锦萍. 阿尔茨海默病患者合并坠积性肺炎的临床特征观察[J]. 中华全科医学, 2015, 13(7): 1091-1010.
Zhang Q, Zhu JP. Clinical characteristics of patients with Alzheimer's disease complicated with hypostatic pneumonia[J]. Chin J Gen Prac, 2015, 13(7): 1091-1010.

[7] 翁绳凤. 老年患者多重耐药菌肺部感染危险因素[J]. 中国感染控制杂志, 2015, 14(10): 701-703. DOI: 10.3969/j.issn.1671-9638.2015.10.014.
Weng SF. Risk factors for multiple drug resistant bacterial pulmonary infection in elderly patients[J]. Chin J Infect Control, 2015, 14(10): 701-703. DOI: 10.3969/j.issn.1671-9638.2015.10.014.

[8] 中华医学会呼吸病学分会感染学组. 铜绿假单胞菌下呼吸道感染诊治专家共识[J]. 中华结核和呼吸杂志, 2014, 37(1): 9-15. DOI: 10.3760/cma.j.issn.1001-0939.2014.01.005.
Respiratory Diseases Infections Group of Chinese Medical Association. Expert consensus on diagnosis and treatment of *Pseudomonas aeruginosa* lower respiratory tract infection[J]. Chin J Tuberc Respir Dis, 2014, 37(1): 9-15. DOI: 10.3760/cma.j.issn.1001-0939.2014.01.005.

[9] 何贤金, 苏超, 储全望, 等. 老年心力衰竭患者的社区获得性肺炎病原菌分布及危险因素分析[J]. 中华老年多器官疾病杂志, 2018, 17(7): 515-519. DOI: 10.1195/J.issn.1671-5403.2018.07.116.
He XJ, Su C, Chu QW, *et al*. Distribution and risk factors of community-acquired pneumonia in elderly patients with heart failure[J]. Chin J Mult Organ Dis Elderly, 2018, 17(7): 515-519. DOI: 10.1195/J.issn.1671-5403.20 18.07.116.

[10] 袁侨英, 张玲, 赵坤, 等. 70岁以上老年肺炎患者临床特征探索[J]. 中华老年多器官疾病杂志, 2014, 13(5): 361-363. DOI: 10.3724/SP.J.1264.2014.00084.
Yuan QY, Zhang L, Zhao K, *et al*. Clinical features of over-70-year-old patients with pneumonia[J]. Chin J Mult Organ Dis Elderly, 2014, 13(5): 361-363. DOI: 10.3724/SP.J.1264.2014.00084.

[11] 李娟, 刘翩, 王开金, 等. 慢性阻塞性肺疾病急性加重期呼吸道感染的病原菌分布和药敏分析[J]. 临床肺科杂志, 2016, 21(11): 2003-2006. DOI: 10.3969/j.issn.1009-6663.2016.11.019.
Li J, Liu P, Wang KJ, *et al*. Pathogenic bacteria distribution and drug sensitivity test for AECOPD patients with respiratory tract infection[J]. J Clin Pulm Med, 2016, 21(11): 2003-2006. DOI: 10.3969/j.issn.1009-6663.2016.11.019.

[12] 谢朝云, 覃家露, 熊芸, 等. 呼吸机相关性肺部多药耐药菌感染的影响因素分析[J]. 中华医院感染学杂志, 2018, 28(13): 2067-2071. DOI: 10.11816/cn.ni.2018-180513.
Xie ZY, Qin JL, Xiong Y, *et al*. Influencing factors for ventilator-associated pneumonia due to multiple drug resistant bacterium[J]. Chin J Nosocomiol, 2018, 28(13): 2067-2071. DOI: 10.11816/cn.ni.2018-180513.

[13] 谢朝云, 熊芸, 孙静, 等. 慢性阻塞性肺疾病多重耐药菌感染的危险因素分析[J]. 天津医药, 2016, 44(6): 744-747. DOI: 10.11958/20150111.
Xie ZY, Xiong Y, Sun J, *et al*. Analysis of risk factors for multiple drug resistant bacterial infections in chronic obstructive pulmonary disease[J]. Tianjin Med J, 2016, 44(6): 744-747. DOI: 10.11958/20150111.

[14] 郭佳琳, 黄莉美, 谢意程, 等. 恶性肿瘤患者医院感染多药耐药菌的药敏结果及危险因素分析[J]. 中华医院感染学杂志, 2017, 27(10): 2194-2197. DOI: 10.11816/cn.ni.2017-163535.
Guo JL, Huang LM, Xie YC, *et al*. Drug susceptibility testing for multiple drug resistant bacterium causing nosocomial infection in malignant tumor patients and analysis of risk factors[J]. Chin J Nosocomiol, 2017, 27(10): 2194-2197. DOI: 10.11816/cn.ni.2017-163535.

[15] 葛芳, 黄丽晴, 毛美琴. 多重耐药菌感染的危险因素与防控措施[J]. 中国消毒学杂志, 2017, 34(3): 292-294. DOI: 10.11726/j.issn.1001-7658.2017.03.035.
Ge F, Huang LQ, Mao MQ. Risk factors and prevention and control measures of multiple drug resistant bacterium infection[J]. Chin J Disinfect, 2017, 34(3): 292-294. DOI: 10.11726/j.issn.1001-7658.2017.03.035.

[16] 罗静. 强化口腔护理干预方法对ICU昏迷患者口腔卫生状况、并发坠积性肺炎的影响探析[J]. 临床研究, 2018, 26(2): 151-152. DOI: 10.3969/j.issn.1004-8650.2018.02.082.
Luo J. Analysis of the effect of intensive oral nursing intervention on oral health status and complicated hypostatic pneumonia in patients with ICU coma[J]. Clin Res, 2018, 26(2): 151-152. DOI: 10.3969/j.issn.1004-8650.2018.02.082.

[17] 贾东岩, 王志刚, 李亚光, 等. 沐舒坦雾化吸入联合静脉注射治疗脑卒中伴坠积性肺炎的疗效[J]. 中国老年学杂志, 2012, 32(17): 3804-3805. DOI: 10.3969/j.issn.1005-9202.2012.17.100.
Jia DY, Wang ZG, Li YG, *et al*. Therapeutic effect of mucosolvan inhalation combined with intravenous injection on stroke complicated with hypostatic pneumonia[J]. Chin J Gerontol, 2012, 32(17): 3804-3805. DOI: 10.3969/j.issn.1005-9202.2012.17.100.

[18] 王海燕. 强化呼吸道管理在长期卧床伴坠积性肺炎患者中的应用效果[J]. 山东医药, 2015, 55(17): 33-35. DOI: 10.3969/j.issn.1002-266X.2015.17.012.
Wang HY. Application of intensive respiratory management in patients with long-term bedridden hypostatic pneumonia[J]. Shandong Med J, 2015, 55(17): 33-35. DOI: 10.3969/j.issn.1002-266X.2015.17.012.

(编辑: 王彩霞)

·消 息·

《中华老年多器官疾病杂志》调整文末参考文献著录格式

自2017年1月起,我刊调整录用稿件的文末参考文献著录格式:(1)中文参考文献采用中英文双语著录,中文在前,英文在后;(2)参考文献如有"数字对象唯一标识符(DOI)"编码,应著录,列于末尾。

示例:

[1] Williamson JD, Supiano MA, Applegate WB, *et al*. Intensive *vs* standard blood pressure control and cardiovascular disease outcomes in adults aged ≥75 years: a randomized clinical trial[J]. JAMA, 2016, 315(24): 2673-2682. DOI: 10.1001/jama.2016.7050.

[2] 李葳, 邓雅丽, 卓琳, 等. 阿司匹林对于心血管疾病一级预防的效果及安全性的系统综述及meta分析[J]. 中华老年多器官疾病杂志, 2016, 15(12): 896-901. DOI: 10.11915/j.issn.1671-5403.2016.12.215.
Li W, Deng YL, Zhuo L, *et al*. Effect and safety of aspirin for primary prevention of cardiovascular diseases: a systematic review and meta analysis[J]. Chin J Mult Organ Dis Elderly, 2016, 15(12): 896-901. DOI: 10.11915/j.issn.1671-5403.2016.12.215.

地址: 100853 北京市复兴路28号,《中华老年多器官疾病杂志》编辑部
电话: 010-66936756
网址: www.mode301.cn
E-mail: zhlndqg@mode301.cn