重症监护病房呼吸机相关性肺炎病原学以及耐药性分析

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摘要 目的:探讨重症监护病房呼吸机相关性肺炎病原学以及耐药性。方法:对我院 2007 年 2 月 -2011 年 7 月 ICU 内出现呼吸机相关性肺炎的患者 99 例作为研究对象,并对取痰液标本进行病原学以及耐药性分析。结果:革兰阴性菌的检出明显高于其他菌属,在 G- 杆菌中铜绿假单胞菌以及大肠埃希菌最为常见,G^+ 球菌中以金黄色葡萄球菌以及肺炎链球菌最为常见;所有菌属均对常规抗菌药物有一定的耐药性,但其对万古霉素的敏感性仍然较高。结论:加强对 ICU 呼吸机相关肺炎进行分离致病菌并对其进行耐药性检测,以指导合理使用抗菌药物,有助于改善患者预后。

关键词:重症监护室;呼吸机;肺炎;耐药性

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Intensive Care Unit Ventilator-Associated Pneumonia Etiology, and Drug Resistance

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ABSTRACT Objective: To investigate the intensive care unit ventilator-associated pneumonia etiology, and drug resistance. Methods: The hospital in February 2007 July 2011 appear in ICU ventilator-associated pneumonia in patients with 99 cases for the study, and sputum specimens of the etiology and to take drug resistance. Results: The detection of Gram-negative bacteria was significantly higher than other species, the G-bacteria Pseudomonas aeruginosa and Escherichia coli is the most common, G^+cocci Staphylococcus aureus and Streptococcus pneumoniae is the most common; all species are on conventional antibiotics have some resistance, but its sensitivity to vancomycin remains high. Conclusion: To strengthen the ICU ventilator-associated pneumonia pathogens were isolated and its resistance testing to guide the rational use of antibiotics, help to improve the prognosis of patients.

Key words: Intensive care unit; Ventilator; Pneumonia; Resistance

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重症监护病房是医院感染高发区,其主要原因是由于其收治的患者基础疾病较多,而且由于患者病情危重[1]。呼吸机相关性肺炎(VAP)是机械通气患者中常见的并发症,以及导致患者不良预后的主要因素之一[2],为探究 VAP 的病原学分布以及其耐药情况,并为临床选用抗菌药物进行治疗时提供依据,我科室对我院 2007 年 2 月 -2011 年 7 月 ICU 内 VAP 发生情况以及其病原学和耐药性进行分析,并对其有了较好认识,现将其报道如下:

1 材料与方法

1.1 临床资料

对我院 2007 年 2 月 -2011 年 7 月 ICU 内采用呼吸机进行治疗 48h 以上的患者中出现 VAP 的患者 99 例进行研究,其中男 69 例,女 30 例,患者年龄为 41-72 岁,平均年龄为 65.9±12.2 岁。纳入标准:患者均使用呼吸机的时间大于 48h,对患者采用 X 线片检查提示患者有胸部侵润性阴影或者出现新的侵润性阴影,对患者进行常规体检发现有湿罗音;同时患者满足以下相关标准之一[3]:患者血白细胞数大于 100×10^9/l,患者体温高于 37.5℃且伴随有脓性分泌物,患者支气管分泌物中分离出新的病原菌。

1.2 研究方法

对所有患者均采用封闭式吸痰管或者采用纤维支气管镜对患者的下呼吸道的痰液标本,并采美国产 MicroScan AutoScan-4 自动细菌鉴定仪进行测定,同时对其药敏实验选择 K28 纸片扩散法对其进行实施,同时根据美国临床实验室标准化委员会所制定的相关细菌药敏实验参考标准进行判断[4,5]。在本临床研究中,我们将铜绿假单胞菌 ATCC27853 作为质控菌株。

1.3 统计学分析

对本临床研究的所有资料采用 SPSS13.0 进行分析,对计数资料采用卡方检验,对计量资料采用 t 检验,检验水准设定为 a=0.05,当 P<0.05 时,认为其有统计学差异性。

2 结果

2.1 患者病原菌的检出比较

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结果如表1所示，显示其中革兰阴性菌的检出明显高于其 G^+ 球菌中以金黄色葡萄球菌以及肺炎链球菌最为常见。他菌属，在 G^- 杆菌中铜绿假单胞菌以及大肠埃希菌最为常见，

表1 病原菌的检出情况分析

Table 1 The analysis of detection condition about Pathogen

Pathogenic bacteria		Strains number	Constituent ratio
Gram-bacilli	Pseudomonas Aeruginosa	26	18.71
	Escherichia Coli	11	7.91
	Klebsiella pneumoniae	11	7.91
	Acinetobacter baumannii	8	5.76
	Enterobacter cloacae	10	7.2
	Acinetinbacter lwoffi	2	1.44
	Xanthomonas maltophilia	7	5.04
	Serratia marcescens	2	1.44
	Proteus	1	0.72
	Epidermis streptococcus	5	3.6
	Staphylococcus Aureus	17	12.22
Gram+ bacilli	Enterococcus faecium	5	3.6
	Viridans Streptococci	3	2.16
	Other	2	1.44
Fungi	White streptococcus	12	8.63
	Other	6	4.32
Atypical pathogens	Mycoplasma pneumoniae	3	2.16
	Chlamydia pneumoniae	3	2.16
	Legionella Pneumophila	5	3.6

2.2 G^- 菌的耐药性临床分析

在本临床研究中，G^- 菌的耐药性如表2所示，结果显示，其 中相关细菌对常规使用抗生素均有一定的耐药性。

表2 G^- 菌的耐药性分析

Table 2 The analysis of resistance about gram-bacilli

Antibiotics	Pseudomonas Aeruginosa 26		Escherichia Coli 11		Acinetobacter baumannii 8		Klebsiella pneumoniae 11	
	Resistant Strains number	Resistant ratio	Resistant Strains number	Resistant ratio	Resistant Strains number	Resistant ratio	Resistant Strains number	Resistant ratio
Aztreonam	7	26.92	3	27.27	3	37.5	5	45.45
Amikacin	6	23.08	4	36.36	2	25	4	39.73
Gentamicin	7	26.92	4	36.36	1	12.5	6	50.68
Levofloxacin	6	23.08	2	18.18	2	25	3	23.29
Ciprofloxacin	6	23.08	3	27.27	2	25	2	21.92
Piperacillin / Tazobactam	0	0	0	0	0	0	0	0
Cefoperazone / Sulbactam	1	3.85	0	0	0	0	0	0
Cefotaxime	0	0	0	0	0	0	0	0
Imipenem	3	11.54	3	27.27	2	25	2	17.81
Cefepime	8	30.77	3	27.27	2	25	3	31.51
Ceftazidime	3	11.54	2	18.18	1	12.5	1	9.59
Meropenem	3	11.54	0	0	1	12.5	0	0.00

2.3 G^- 菌的耐药性临床分析

在本临床研究中，G^+ 菌的耐药性如表 3 所示，结果显示，其中相关细菌对常规使用抗生素均有一定的耐药性。

表 3 G^+ 菌的耐药性分析

Table 3 The analysis of resistance about gram+bacilli

Antibiotics	Staphylococcus Aureus 17		Enterococcus 5		Staphylococcus epidermidis 5		Viridans Streptococci 2	
	Resistant Strains number	Resistant ratio	Resistant Strains number	Resistat ratio	Resistant Strains number	Resistat ratio	Resistant Strains number	Resistat ratio
Penicillin	17	100	4	80	1	20	1	50
Nafcillin	15	88.24	4	80	1	20	2	100
Cefazolin	14	82.35	4	80	2	40	2	100
Cephalothin	14	82..5	5	100	2	40	2	100
Ciprofloxacn	17	100	5	100	4	80	1	50
Clindamycin	13	76.47	3	60	3	60	1	50
Erythromycn	11	64.71	2	40	3	60	2	100
Vancomycin	0	0	0	0	0	0	0	0

3 讨论

在本临床研究中，我们对所有痰液均采用人工气道运用一次性封闭防污染痰液的收集器对其进行收集，有效的避免的被其他菌群所污染[6]，从而可较为准确的对呼吸机相关肺炎的病原学分布进行探讨。ICU 呼吸机相关肺炎其病原菌主要以格兰阴性菌为主，其中铜绿假单胞菌以及金黄色葡萄球菌作为其最重要的致病菌，其与文献报道[7-9]基本一致。通过本临床研究我们发现，金黄色葡萄球菌、铜绿假单胞菌、鲍氏不动杆菌以及肺炎克雷伯杆菌是构成 ICU 呼吸机相关肺炎的病原主要菌群，其与文献报道[10]基本保持一致。在对金黄色葡萄球菌的耐药性调查中，我们发现其对苯唑西林的耐药性为 82.35%与文献报道[11-12]较为接近，我们认为其造成呼吸机相关性肺炎病原菌中耐甲氧西林金黄色葡萄球菌所占比例较高的主要原因可能与 ICU 内的患者其大多合并有较为严重的基础疾病而且其疾病住院天数长且广泛使用第三代头孢、并有部分患者建立人工气道有明显的相关性。马杏云等[13-16]研究发现，医护人员的手部可作为医院传染 MRSA 的一重要介质。在本临床研究中，我们要求在对患者进行检查以及相关护理工作中应当使用一次性手套，从而减少 MRSA 的传播。在对 G^+ 菌的研究中发现，其对万古霉素均无耐药性，对于其他抗生素其耐药性均超过 50%，表明对于 G^+ 菌所导致的 ICU 呼吸机相关肺炎的治疗选择使用万古霉素具有良好的临床疗效。Halpern，等[17-19]对 G^- 菌的研究发现，由于其具有普遍耐药性，从而对于这类菌群感染的患者应当对其先进行相关药敏实验，待实验结果出来后对其采用多种抗菌药物联合治疗，在本临床研究中，鲍氏不动杆菌、鲍曼不动杆菌、铜绿假单胞菌等均对头孢噻肟、头孢哌酮/舒巴坦、哌拉西林/他唑巴坦具有良好的敏感性。但其对美罗培南以及亚胺培南的耐药性在 10%左右，与以往文献报道有较大差距，从而应当引起临床医师的注意以及重视。

总之，ICU 呼吸机相关肺炎的病原菌均有较强的耐药性而且出现多药耐药性的特征，而且对在其进行治疗过程中，细菌对抗菌药物的敏感性逐渐降低，而其耐药性在上升，当选择不恰当的治疗将给治疗带来较为严重的后果[20]，从而为 ICU 的抗菌药物的选择提出了较大难题。故我们认为应当加强对 ICU 呼吸机相关肺炎进行分离致病菌并对其进行耐药性检测，以指导合理使用抗菌药物。

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