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慢性支气管炎患者下呼吸道感染病原菌分布及耐药性分析 *

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摘要 目的:研究老年慢性支气管炎患者合并下呼吸道感染病原菌分布以及耐药性。**方法**:选取 2009 年 1 月到 2013 年 12 月我院收治的老年慢性支气管炎患者合并下呼吸道感染患者 261 例,采集所有患者的痰液,然后进行病原菌鉴定和药敏试验。**结果**:261 例患者中,144 例革兰阴性杆菌感染(55.2%),51 例革兰阳性杆菌感染(19.5%),66 例真菌感染(25.3%),其中混合感染者 36 例(13.8%)。革兰阴性杆菌以肺炎克雷伯菌最多(18.4%),革兰阳性杆菌以金黄色葡萄球菌最多(9.2%)。革兰阴性杆菌对亚胺培南的耐药性最低，其次是头孢哌酮和阿米卡星，对氨苄西林耐药率最高。金黄色葡萄球菌和表皮葡萄球菌对青霉素的耐药率均为 100.0%,均对万古霉素敏感,其次是对环丙沙星敏感。**结论**:老年慢性支气管炎患者合并下呼吸道感染以革兰阴性杆菌感染为主,真菌和混合感染也占一定的比例,应该引起注意。

关键词:慢性支气管炎;下呼吸道感染;病原菌;耐药性

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Study on the Distribution and Drug Resistance of Pathogenic Bacteria of Lower Respiratory Tract infection in Patients with Chronic Cronchitis*

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ABSTRACT Objective: To study the distribution and drug resistance of pathogenic bacteria in elderly patients with chronic bronchitis combined with lower respiratory tract infection. **Methods:** 261 elderly patients with chronic bronchitis combined with lower respiratory tract infection admitted in our hospital from January 2009 to December 2013 were enrolled in this study. The sputum of patients were collected and conducted pathogen identification and drug sensitive test. **Results:** Among the 261 patients, 144 infected with gram negative bacilli which accounted for 55.2%, 51 infected with gram positive bacteria which accounted for 19.5%, 66 mainly infected with fungus which accounted for 25.3%, and 36 were combined infection which accounted for 13.8%. The majority of gram negative bacilli was klebsiella pneumonia which accounted for 18.4%, and the majority of gram positive bacteria was staphylococcus aureus which accounted for 9.2%. The drug resistance of gram negative bacilli to Imipenem was the lowest, followed by Cefoperazone and Amikacin, with the highest to Ampicillin. Staphylococcus aureus and staphylococcus epidermidis were 100.0% resistant to Penicillin, and all sensitive to Vancomycin, followed by Ciprofloxacin. **Conclusion:** The majority of lower respiratory tract infection in elderly patients with chronic bronchitis was gram negative bacilli, and there were also certain percentages of fungus and combined infection, which should be paid attention to.

Key words: Chronic bronchitis; Lower respiratory tract infection; Pathogenic bacteria; Drug resistance

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前言

下呼吸道感染是一种常见的感染性疾病,应用抗菌药物治疗是主要的治疗方法,但是临床上不合理应用抗菌药物现象较多,引起病原菌耐药菌株增加[1-3],给治疗带来困难,因此了解下呼吸道感染的病原菌分布和耐药性,应用合理的药物能显著增强治疗效果，同时减轻患者的经济负担 [4-6]。本研究旨在研究 2009 年 1 月到 2013 年 12 月我院收治的老年慢性支气管炎患者合并下呼吸道感染患者 261 例病原菌分布以及耐药性,为临床治疗提供依据。

1 资料与方法

1.1 临床资料

筛选我院 2009 年 1 月到 2013 年 12 月收治的老年慢性支气管炎合并下呼吸道感染患者 261 例,所有患者均符合慢性支气管炎的诊断标准,且确诊为下呼吸道感染。其中,男 135 例,女 126 例,年龄 60-80 岁,平均(66.7± 1.3)岁。本研究严格依据伦理委员会制定的伦理标准进行,患者及家属均知情且签订知情同意书。

1.2 标本选取

取所有患者的痰液,将痰液进行显微镜镜检,判定痰液涂片中白细胞和上皮细胞的比例＞2.5 者为合格痰液，标本予以留存,反之重取标本。将所取合格痰液平布接种于巧克力、麦穗

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凯及萨布罗平板上进行细菌培养。

1.3 主要试剂及仪器

实验研究所需血液琼脂、麦糠凯琼脂、萨布罗琼脂、巧克力琼脂、相关 API 鉴定纸条及药敏纸片均由法国生物梅里埃公司提供。

1.4 细菌鉴定及药敏试验

实验研究中质量控值以标准的菌株大肠埃细菌 ATCC25922、金黄色葡萄球菌 ATCC25923、粪肠球菌 ATCC29212、铜绿假单胞菌 ATCC28753 为参照标准。实验选用标准 API 鉴定纸条，参照病原菌菌种的鉴定标准进行鉴定。采用纸片扩散法进行药敏试验及结果判定。

2 结果

2.1 痰液中病原菌分布

由表 1 可知，261 例患者中 144 例以革兰阴性杆菌感染为主，占 55.2%，51 例以革兰阳性杆菌感染为主，占 19.5%，66 例以真菌感染为主，占 25.3%，其中混合感染者 36 例，占 13.8%。革兰阴性杆菌以肺炎克雷伯菌最多，占 18.4%，革兰阳性杆菌以金黄色葡萄球菌最多，占 9.2%。

表 1 下呼吸道感染病原菌分布(例，%)

Table 1 Distribution of pathogenic bacteria of lower respiratory tract infection (n, %)

Pathogenic bacteria		Cases	Percentage
Gram negative bacilli		144	55.2
	Klebsiella pneumoniae	48	18.4
	Acinetobacter baumannii	24	9.2
	Pseudomonas aeruginosa	21	8.0
	Klebsiella oxytoca	15	5.7
	Escherichia coli	12	4.6
	Enterobacter cloacae	9	3.4
	Hemophilus influenzae	6	2.3
	Serratia marcescens	3	1.1
	Stenotrophomonas maltophilia	3	1.1
	other non-fermentative bacteria	0	
Gram positive bacteria		51	19.5
	Staphylococcus aureus	24	9.2
	Staphylococcus epidermidis	21	8.0
	Streptococcus pneumoniae	3	1.1
	other gram positive bacteria	3	1.1
Fungus		66	25.3
	Candida albicans	42	16.1
	Candida tropicalis	9	3.4
	Candida krusei	9	3.4
	other fungus	6	2.3
Mixed bacterial strain		36	13.8
	Candida albicans + *staphylococcus epidermidis*	12	33.3
	Klebsiella pneumoniae + *pseudomonas aeruginosa*	9	25.0
	Candida albicans + *klebsiella pneumoniae*	9	25.0
	Hemophilus influenzae + *staphylococcus aureus*	6	16.7

2.2 痰液主要革兰阴性菌耐药性分析

表 2 显示，痰液中存在的革兰阴性杆菌对亚胺培南的耐药性最低，其次依次为头孢哌酮和阿米卡星，对氨苄西林耐药率最高。肺炎克雷伯菌和大肠埃细菌 ESBLs 阳性菌株分布为 38.2%、40.2%。

表 2 主要革兰阴性杆菌的耐药性分析(例，%)

Table 2 Drug resistance of major gram negative bacilli

Antibacterial agents	*Klebsiella pneumoniae*		*Pseudomonas aeruginosa*		*Escherichia coli*		*Acinetobacter baumannii*		*Enterobacter cloacae*	
Ampicillin	48	100.0	21	100	9	75.0	21	87.5	9	100.0
Piperacillin	42	87.5	15	71.4	9	75.0	18	75.0	6	66.7
Cefazolin	39	81.3	21	100	9	75.0	24	100	6	66.7
Ceftazidime	21	43.8	6	28.6	6	50.0	18	75.0	6	66.7
Cefoperazone	21	43.8	9	42.8	9	75.0	9	37.5	9	100.0
Cefotaxime	24	50.0	18	85.7	9	75.0	18	75.0	6	66.7
Gentamicin	9	18.8	18	85.7	6	50.0	18	75.0	6	66.7
Amikacin	6	12.5	15	71.4	6	50.0	15	62.5	3	33.3
Imipenem	3	6.3	3	14.3	3	25.0	3	12.5	0	0.0
Ofloxacin	21	43.8	9	42.8	6	50.0	6	25.0	3	33.3
Ciprofloxacin	24	50.0	12	57.1	6	50.0	6	25.0	3	33.3

2.3 痰液主要革兰阳性杆菌耐药性分析

表 3 显示，表皮葡萄球菌及金黄色葡萄球菌对青霉素的耐药率均为 100.0%，均对万古霉素敏感，其次是对环丙沙星敏感。

表 3 主要革兰阳性杆菌耐药性分析(例,%)

Table 3 Drug resistance of major gram positive bacteria (n, %)

Antibacterial agents	*Staphylococcus aureus*		*Staphylococcus epidermidis*	
Penicillin	24	100.0	21	100.0
Ampicillin	21	87.5	18	85.7
Oxacillin	15	62.5	12	57.1
Cefazolin	21	87.5	18	85.7
Gentamicin	15	62.5	12	57.1
Vancomycin	0	0.0	0	0.0
Imipenem	6	25.0	3	14.3
Erythromycin	21	87.5	18	85.7
Ciprofloxacin	9	37.5	9	42.9

3 讨论

下呼吸道感染是临床上常见疾病,对患者具有一定的危害性,抗菌药物治疗是主要的治疗方法。近年来,随着抗菌药物的滥用,耐药病原菌呈现增多的趋势[11-13]。有文献显示[14-16],引起下呼吸道感染的病原菌在感染趋势上已从外源性致病菌转换为内源性条件性的致病菌,且下呼吸道病原菌随着广谱抗菌药物的应用出现了较大的变化,以革兰阴性杆菌感染为主要病原菌。本研究结果显示,261 例患者中 144 例以革兰阴性杆菌感染为主,占 55.2%,51 例以革兰阳性杆菌感染为主,占 19.5%,66 例以真菌感染为主,占 25.3%,其中混合感染者 36 例,占 13.8%,充分证明革兰阴性杆菌是下呼吸道感染的最主要致病菌。我们发现流感嗜血菌感染占 2.3%,肺炎链球菌感染占 1.1%。真菌培养结果显示,66 例以真菌感染为主,占 25.3%,超出革兰阳性杆菌感染者,结果提示我们在临床治疗中应充分重视。此外,结果显示混合感染者 36 例,占 13.8%,说明混合感染也占相当大的比例,应该高度重视。

临床长期应用广谱抗菌药物、糖皮质激素、免疫抑制剂等药物,对于老年慢性支气管炎患者会引起患者机体免疫能力下降,造成混合感染几率增加[17]。从耐药性分析可知,痰液中革兰阴性杆菌对亚胺培南的耐药性最低,其次分别为头孢哌酮及阿米卡星,对氨苄西林耐药率最高。肺炎克雷伯菌和大肠埃细菌 ESBLs 阳性菌株分布为 38.2%、40.2%,可能和长期应用三代头孢有关系,提示在临床治疗时对 ESBLs 阳性菌株可以考虑应用亚胺培南进行治疗,提高治疗的临床疗效。金黄色葡萄球菌和表皮葡萄球菌对青霉素的耐药率均为 100.0%,均对万古霉素敏感,其次是对环丙沙星敏感,和文献报告一致[18-20]。提示对于耐药性较强的金黄色葡萄球菌和表皮葡萄球菌可以考虑应用万古霉素进行治疗,是抗菌治疗的最后一道防线。因此,在临床治疗时应该结合实验室检查结果,根据药敏试验来选择合理的抗菌药物,提高治疗的临床疗效。

综上所述,下呼吸道感染是临床上常见的疾病,其中革兰阴性杆菌感染最多,真菌感染和混合感染也占一定比例,而革兰阴性杆菌对亚胺培南的耐药性最低,也最为敏感,万古霉素对金黄色葡萄球菌和表皮葡萄球菌较敏感。

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