

131 例住院肺炎患儿细菌感染现状及耐药谱分析

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摘要 目的 分析住院肺炎患儿的病原菌分布及其耐药性。方法 :选择 2009 年 6 月至 2010 年 5 月,新疆维吾尔自治区人民医院儿科住院的 791 例肺炎患儿,采取下呼吸道痰液标本,进行细菌培养及药敏试验。结果 :16.56% (131/791) 患儿被确诊为细菌性肺炎并且有明确的病原,其中,革兰阴性菌感染为 75.57% (99/131),且以肺炎克雷伯氏菌、大肠埃希菌、阴沟肠杆菌多见;革兰阳性菌感染为 21.37% (28/131),以肺炎链球菌多见;真菌感染为 6.87% (9/131),均为白色假丝酵母;9.92% (13/131) 的患儿存在两种及以上病原菌感染。鲍曼不动杆菌和肠杆菌对头孢类抗生素耐药严重,部分肺炎克雷伯菌、大肠埃希菌产 β -内酰胺酶 (BLA),葡萄球菌属耐青霉素 G,肠球菌对氯洁霉素、红霉素和复方新诺明耐药率 100%,而肺炎链球菌对红霉素耐药率 100%。真菌对常用抗菌药的耐药率为 0。结论 :我院住院肺炎患儿细菌性为 16.56%。病原菌构成以革兰阴性菌为主,并且大多数病原菌耐药。临床应根据痰液细菌培养和药敏结果,合理选择抗菌药物,以减少细菌耐药性,防止滥用抗生素。

关键词 细菌性肺炎 病原菌 耐药

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Current Status of Bacteria Infection in 131 Hospitalized Children with Pneumonia and Analysis of Relative Antibiotic Resistance Spectrum

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ABSTRACT Objective: To investigate the distribution and resistance of pathogens in hospitalized children with pneumonia. **Methods :**

From June 2009 to May 2010, 791 hospitalized children with pneumonia were taken sputum specimens of lower respiratory tract for bacterial culture and sensitivity test. **Results :** 16.56% (131/791) of them were with definite pathogens. The infection rate of Gram-negative bacteria was 75.57% (99/131), Klebsiella pneumonia, Escherichia coli, Enterobacter cloacae were more common. The infection rate of Gram-positive bacteria was 21.37% (28/131), Streptococcus pneumonia was more common. And the infection rate of fungi was 6.87% (9/131), all of them were white Candida. The rate of patients infected with two or more pathogens was 9.92% (13/131). Acinetobacter baumannii and Enterobacter should be showed serious against Cephalosporins in antimicrobial sensitivity and resistance tests. Part of Klebsiella pneumonia and Escherichia coli were ESBL, All of Staphylococcus was penicillin G-resistant, the drug resistant rates of clindamycin, erythromycin and cotrimoxazole to Enterococcus was 100%, of erythromycin to Streptococcus pneumonia was 100%. As for fungi, the drug resistant rate was 0. **Conclusion :** The infection rate of bacterial pneumonia in hospitalized children was 16.56%. The main pathogen of bacterial pneumonia was gram-negative bacteria, and most of them were drug-resistant. According to results of susceptibility tests, reasonable treatment could reduce the bacterial resistance.

Key words: Bacterial pneumonia; Pathogen; Resistance

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前言

近年来,随着我国广谱抗生素的广泛使用,细菌耐药在临床非常常见,给临床用药造成困难。为探讨住院肺炎患儿中细菌性肺炎的病原菌构成及耐药情况,提高病原学诊断水平,指导临床用药。将我院 2009 年 6 月~2010 年 5 月收住的 791 例肺炎患儿痰液细菌培养及药敏实验情况进行回顾性分析。

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1 资料与方法

1.1 临床资料

2009 年 6 月至 2010 年 5 月,在新疆维吾尔自治区人民医院儿科住院的肺炎患儿 791 例,被确诊为细菌性肺炎并且有明确病原的患儿 131 例,其中,男性患儿为 90 例,女性为 41 例,年龄最小为 1 天,最大为 11 岁,110 名患儿年龄 ≤ 1 岁,占 83.97% (110/131)。

1.2 诊疗经过

本研究所有患儿临床均有咳嗽、咳痰、发热,确诊为肺炎后

收住入院。在收住入院后,使用抗生素前,清洁口腔、刺激咳嗽后,用一次性取痰器,抽取患儿呼吸道深部痰液。痰液标本接种于羊血平板、巧克力平板培养基,培养 24h 后以 Vitek-32 细菌鉴定仪鉴别可疑菌落,进行超广谱 β 内酰胺酶检测,并用 M-H 平板作药物敏感实验,将可疑霉菌菌落作霉菌鉴定及药敏实验。

1.3 统计学方法

本研究数据采用 SPSS14.0 统计学软件进行统计学处理。

2 结果

2.1 痰液细菌培养结果

通过痰液细菌培养,791 份痰液标本中,细菌培养阳性率为 16.56%(131/791)。131 例细菌性肺炎患儿下呼吸道痰培养结果显示,革兰阴性菌感染为 99 例 (75.57%)。其中,克雷伯氏菌

属 43 例 (肺炎克雷伯菌 40 例,产酸克雷伯氏菌 3 例),大肠埃希菌为 26 例,肠杆菌 23 例 (阴沟肠杆菌 17 例,产气肠杆菌 4 例,阿氏肠杆菌 2 例),肺炎克雷伯菌 ESBLs(+)22 例,大肠埃希菌 ESBLs(+)20 例,鲍曼不动杆菌 12 例,铜绿假单胞菌 4 例,嗜麦芽窄食单胞菌 1 例,沙雷菌 2 例 (粘质 1 例,液化 1 例)。革兰阳性菌感染为 27 例 (20.61%),其中,葡萄球菌属 13 例 (金黄色葡萄球菌 7 例,人葡萄球菌 4 例,表皮葡萄球菌 2 例,溶血葡萄球菌 1 例),肺炎链球菌 14 例,肠球菌属 2 例 (屎肠球菌 (D 群) 和粪肠球菌 (D 群) 各 1 例)。真菌感染为 9 例 (6.87%),均为白色假丝酵母。13 例患者存在两种及以上病原菌感染。

2.2 药敏实验结果

本研究革兰阴性菌主要菌株、革兰阳性球菌及 ESBLs(+) 的药敏实验结果 (见表 1、表 2)。白色假丝酵母对常用抗菌药 (5-氟胞嘧啶、氟康唑、伊曲康唑及两性霉素 B) 的耐药率均为 0。

表 1 革兰阴性菌主要菌株耐药结果 (%)

Table 1 Drug resistant results of main strains of Gram-negative bacteria(%)

Antibiotics	Klebsiella	E.coli	K.ESBLs(+)	E.coli ESBLs(+)	Enterobacter	Acinetobacter baumannii
Cefuroxime	55.81	76.92	100.00	95.00	34.78	100.00
Cefuroxime axetil	55.81	76.92	100.00	95.00	95.65	100.00
Cefazolin	62.79	80.77	100.00	100.00	95.65	100.00
Ampicillin	97.67	88.46	100.00	100.00	95.65	100.00
Ampicillin / sulbactam	73.08	73.08	90.91	90.00	91.30	8.33
Cefoperazone / sulbactam	32.56	38.46	63.64	45.00	21.74	0.00
Cefepime	51.16	76.92	100.00	95.00	21.74	0.00
Gentamicin	34.88	42.31	68.18	50.00	13.04	0.00
Imipenem	0.00	3.85	0.00	5.00	8.70	0.00
Levofloxacin	4.65	26.92	0.00	35.00	4.35	0.00
Meropenem	0.00	0.00	0.00	0.00	0.00	0.00
Piperacillin	93.02	84.62	100.00	100.00	21.74	8.33
Cotrimoxazole	34.88	34.88	68.18	50.00	13.04	0.00
Ceftazidime	51.16	76.92	100.00	95.00	21.74	8.33
Tobramycin	34.88	32.56	68.18	50.00	17.39	0.00
Piperacillin / tazobactam	2.32	3.85	4.55	5.00	17.39	8.33
Cefotetan	6.98	7.69	4.55	10.00	82.61	91.67
Ceftriaxone	48.84	73.08	95.45	90.00	21.74	91.67
Amikacin	2.32	11.54	0.00	15.00	8.70	0.00
Aztreonam	53.49	76.92	100.00	95.00	21.74	91.67
Ciprofloxacin	4.65	26.92	90.91	35.00	8.70	0.00
Nitrofurantoin	76.74	15.38	81.82	20.00	47.83	100.00
Ticarcillin / clavulanic acid	23.26	42.31	45.45	50.00	21.74	8.33

2.3 疗效

在细菌培养和药敏试验结果的指导下,131 例细菌性肺炎患儿,经过使用敏感抗生素治疗,治愈 104 例,好转 24 例,死亡 1 例,自动出院 2 例。

3 讨论

肺炎是严重威胁我国儿童健康和生命的四大常见疾病之一,同时也是 5 岁以下儿童的首位死因^[1]。本研究通过痰细菌培

表 2 革兰阳性菌对常用抗菌药物的耐药率 (%)

Table 2 Antimicrobial resistance rates of Gram-positive bacteria against common antibiotics(%)

Antibiotics	S.pneumoniae	S.aureus	S.huminis	S.epidermidis	S.hemolyticus	E.feces (D group)	E.gallinarum (D group)
Ampicillin / sulbactam	-	14.29	100.00	100.00	100.00	100.00	100.00
Clindamycin	-	42.86	100.00	100.00	100.00	100.00	100.00
Ciprofloxacin	-	14.29	25.00	100.00	100.00	100.00	100.00
Erythromycin	100.00	28.57	100.00	100.00	100.00	100.00	100.00
Fosfomycin	-	0.00	75.00	0.00	100.00	-	-
Gentamicin	-	0.00	25.00	50.00	100.00	-	-
Imipenem	-	14.29	100.00	100.00	100.00	100.00	100.00
Oxacillin	-	14.29	100.00	100.00	100.00	-	-
Penicillin G	92.86	100.00	100.00	100.00	100.00	-	100.00
Rifampicin	-	0.00	0.00	0.00	0.00	-	-
Cotrimoxazole	85.71	0.00	50.00	100.00	100.00	100.00	100.00
Tetracycline	85.71	0.00	75.00	50.00	100.00	100.00	100.00
Tetracycline	-	0.00	25.00	0.00	0.00	0.00	0.00
Vancomycin	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Kuinupuding/Da Fupu sting	-	0.00	0.00	0.00	0.00	0.00	0.00
Linezolid	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moxifloxacin	0.00	0.00	0.00	50.00	100.00	100.00	100.00
Chloromycetin	71.43	-	-	-	-	-	-
Levofloxacin	7.14	-	-	-	-	-	100.00

养结果分析发现,住院肺炎患儿下呼吸道病原菌主要是以革兰阴性菌为主,与文献报道的相一致^[2-4],而山西王军^[5]报道儿童下呼吸道病原菌以革兰阳性菌感染为主。广州邓秋连等^[6]报道儿童下呼吸道感染最常见的病原菌是流感嗜血杆菌和肺炎链球菌。本研究结果显示病原菌以肺炎克雷伯菌、大肠埃希菌为主。

由于抗菌药物的广泛应用,肺炎克雷伯菌、大肠埃希菌和鲍曼不动杆菌等机会致病菌感染,其耐药性的不断增加,给临床治疗带来了极大困难。该组资料中所分离的 26 株大肠埃希菌有 20 株产 ESBLs 的,占 76.92%,肺炎克雷伯菌中产 ESBLs 占 55%。我们分离的大肠埃希菌 ESBLs (+) 比例高于相关报道^[7],这可能由于患者对第三代头孢菌素的选用率较高有关。肠杆菌对环丙沙星和丁胺卡那霉素的耐药性较低,由于两者有耳、肾毒性、神经毒性和软骨损害等不良反应,不宜应用于未成年人。本研究提示,肺炎克雷伯菌和大肠埃希菌不仅对第三代头孢菌素耐药,而且对加酶抑制剂 β - 内酰胺类复合药物等耐药性越来越高,其原因是这些耐药株产生超广谱 β - 内酰胺酶 (extended spedrum β -lactamases,ESBLs)。本研究显示,美洛培南、哌拉西林 / 他唑巴坦、亚胺培南仍为治疗儿童革兰阴性菌引起感染最有效的抗菌药物,但不同的细菌其敏感性差异较大,非发酵菌对头孢类抗生素耐药性非常高,对本研究其他抗菌药物敏感,其他菌的耐药率参差不齐,在革兰阳性菌中,金黄色葡萄球菌对青霉素 G 完全耐药;人葡萄球菌和表皮葡萄球

菌均对利福平、万古霉素、喹努替啶 / 达副普啶及利奈唑烷敏感,肠球菌对利奈唑烷、喹努替啶 / 达副普啶和替考拉宁敏感,而鸢鸡肠球菌 (D 群) 对万古霉素的耐药率为 100%。肺炎链球菌对红霉素耐药率为 100%。白色假丝酵母对常用抗菌药耐药率为 0。

总之,本院住院细菌性肺炎患儿下呼吸道感染的细菌以革兰阴性菌为主,不同菌种对抗菌药物的耐药率存在较大差异,因此,临床用药要根据药敏试验结果,选择不常用的抗生素或交替轮换使用^[8],可以降低细菌耐药性,达到提高治疗效果的目的。

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