中国感染控制杂志 2011, 10(5) 344-347 DOI: ISSN: 1671-9638 CN: 43-1390/R

论著

鲍曼不动杆菌生物膜形成抑制剂实验室初步研究

聂大平，马荣，刘永娥，李飞

聂大平，马荣，刘永娥，李飞

摘要：

目的了解鲍曼不动杆菌(Ab)耐药性及乙二胺四乙酸（EDTA）、米诺环素和水杨酸对其生物膜形成的影响。方法采用纸片扩散法测定72 株Ab对抗菌药物的敏感性；微量肉汤法测定EDTA、米诺环素和水杨酸对Ab的最低抑菌浓度（MIC）；黏附半定量法测定不同耐药性Ab生物膜生成率及不同浓度EDTA、米诺环素和水杨酸对生物膜形成和成熟生物膜的影响。结果 EDTA、米诺环素和水杨酸对Ab的 MIC90分别为200 mg/L、4 mg/L和600 mg/L。Ab敏感株、多重耐药株和泛耐药株生物膜形成阳性率分别为22.22%、83.33%和76.67%。250 mg/L和500 mg/L EDTA、4 mg/L和8 mg/L米诺环素以及1 000 mg/L水杨酸可抑制成熟生物膜。结论生物膜在多重耐药和泛耐药的Ab中生成较高，EDTA、米诺环素和水杨酸均有抑制生物膜形成的作用。

关键词： 鲍曼不动杆菌 生物膜 乙二胺四乙酸 米诺环素 水杨酸 抗药性 微生物

Biofilm formation and inhibition in Acinetobacter baumannii

NIE Da ping, MA Rong, LIU Yong e, LI Fei

The Second Affiliated Hospital of Dalian Medical University,Dalian 116027, China

Abstract:

ObjectiveTo realize the antimicrobial resistance of Acinetobacter baumannii (Ab), and effect of ethylenediaminetetra 5 acetic acid （EDTA ）,minocycline and salicylic acid on its biofilm formation. MethodsAntimicrobial susceptibilities of 72 strains of Ab were detected with Kirby Bauer method; Minimal inhibitory concentrations of EDTA, minocycline and salicylic acid on Ab were determined by broth microdilution method; The biofilm formation rates of different drug resistant Ab and the effect of different concentrations of EDTA, minocycline and salicylic acid on biofilm formation and mature biofilm were determined by adhesion test.ResultsThe MIC90 of EDTA, minocycline and salicylic acid for Ab was 200 mg/L,4 mg/L and 600 mg/L, respectively. The biofilm positive rates in sensitive Ab （SAb） strains, multi drug resistant (MDRAb) strains and pan drug resistant (PDRAb) strains was 22.22%, 83.33% and 76.67%, respectively. EDTA with concentration of 250 mg/L and 500 mg/L, minocyline 4 mg/L and 8 mg/L,and salicylic acid 1 000 mg/L can inhibit the mature biofilm.ConclusionThere are a high biofilm positive rate in multi drug and pan drug resistant Ab . EDTA, minocycline and salicylic acid can inhibit the formation of biofilm.

Keywords: Acinetobacter baumannii; biofilm ethylenediaminetetra 5 acetic acid minocycline;salicylic acid;drug resistance,microbial

收稿日期 2011-03-15 修回日期 2011-05-12 网络版发布日期 2011-09-30

DOI:

基金项目:

通讯作者: 聂大平

作者简介: 聂大平(1956-),女(汉族),辽宁省大连市人,主任技师,主要从事细菌耐药性研究。

作者Email: wsw2703@163.com

参考文献：

［1］Vidal R, Dominguez M,Urrutial H, et al. Biofilm formation by Acinetobacter baumannii［J］. Microbios, 1996, 86(346):49-58.

［2］Lee H W,Koh Y M, Kim J,et al.Capacity of multidrug resistant clinical isolates of Acinetobacter baumannii to form biofilm and adhere to epithelial cell surfaces［J］.Clin Microbiol Infect, 2008,14（1）：49-54.

［3］Cevahir N, Demir M, Kaleli H, et al. Evaluation of biofilm production,gelatinase actity,and mannose

resistant hemagglutination in Acinetobacter baumannii strains [J] .J Microbiol Immunol Infect, 2008,41 (6):513-518.
[4] Rao R S, Karthika R U, Singh S P, et al. Correlation between biofilm production and multiple drug resistance in imipenem resistant clinical isolates of Acinetobacter baumannii [J] . Indian J Med Microbiol,2008, 26(4):333-337.
[5] King L B, Swiatio E,Swiatlo A, et al.Serum resistance and biofilm formation in clinical isolates of Acinetobacter baumannii [J] .FEMS Immunol Med Microbiol, 2009, 55(2):414-421.
[6] Banin E,Brady K M,Greenberg E P.Chelator induced dispersal and killing of Pseudomonas aeruginosa cells in a biofilm [J] . Appl Environ Microbiol, 2006, 72(3):2064-2069.
[7] Raad I,Hachem R,Tcholakian R K, et al.Efficacy of minocycline and EDTA lock solution in preventing chtheter related bacteremia, septic phlebitis, and endocarditis in rabbits [J] . Antimicrob Agents Chemother,2002, 46(2):327-333.
[8] Raad I,Reitzel R, Jiang Y,et al.Anti adherence activity and antimicrobial durability of anti infective coated catheters against multidrug resistant bacteria [J] . J Antimicro Chemother, 2008, 62(4):746-750.
[9] Percival S L, Kite P, Eastwood K, et al .Tetrasodium EDTA as a novel central venous catheter lock solution against biofilm [J] . Infect Control Hosp Epidemiol, 2005, 26(6):515-519.
[10] Nucleo E, Steffanoni L, Fugazza G,et al. Growth in glucose based medium and exposure to subinhibitory concentrations of imipenem induce biofilm formation in a multidrug resistant clinical isolate of Acinetobacter baumannii [J] .BMC Microbiol,2009,9(2):270-283.
[11] O' May C Y, Sanderson K.Iron binding compounds impair Pseudomonas aeruginosa biofilm formation, especially under anaerobic conditions [J] .J Med Microbiol,2009,58(6):765-773.
[12] Farber B F,Hsieh H C,Donnenfeld E D, et al.A novel antibiofilm technology for contact lens solution [J] . Ophthalmology,1995,102(5):831-836.

本刊中的类似文章

1. 毛璞, 单靖岚, 叶丹, 郑蕾, 李莲娜, 黎毅敏.ICU多重耐药鲍曼不动杆菌医院感染的同源性分析 FREE[J]. 中国感染控制杂志, 2010,9(1): 6-9
2. 赖智双, 陈愉生, 石松菁, 许能锋.内科重症监护室鲍曼不动杆菌医院感染危险因素病例对照研究 FREE[J]. 中国感染控制杂志, 2010,9(1): 10-14
3. 刘晓春, 王国庆, 王蓉, 刘运德.产ESBLs肺炎克雷伯菌耐药性及基因分型 FREE[J]. 中国感染控制杂志, 2010,9(1): 15-18
4. 汪定成，张惠中，杨丽华，戈伟，邵海连，韩香妮.利奈唑胺等抗菌药物对肠球菌属体外抗菌活性评价 FREE[J]. 中国感染控制杂志, 2010,9(1): 37-39
5. 周秀珍，刘建华，孙继梅，刘勇.铜绿假单胞菌对β 内酰胺类抗生素的耐药性变迁 FREE[J]. 中国感染控制杂志, 2010,9(1): 43-45
6. 顾乐平，黄晓平，蔡瑞云.产ESBLs大肠埃希菌、肺炎克雷伯菌的分布及耐药性分析 FREE[J]. 中国感染控制杂志, 2010,9(1): 46-48
7. 张进军，杨怀德，向雪琼，李雪梅.非发酵菌在临床标本中的检出及耐药性分析 FREE[J]. 中国感染控制杂志, 2010,9(1): 49-52
8. 黄利芝,李静.下呼吸道感染病原菌分布及耐药性分析 FREE[J]. 中国感染控制杂志, 2010,9(1): 53-54
9. 王冠1，柯雪梅2，陈清2.不动杆菌肺炎的流行病学与防治 FREE[J]. 中国感染控制杂志, 2010,9(1): 70-72
10. 宗春辉 1，孙兰菊 2，李东华 2，朱广莉 2，吴尚为1.MRSA分子流行病学研究 FREE[J]. 中国感染控制杂志, 2010,9(2): 85-88
11. 刘 强，肖 鑫，张蕾蕾，许培仁.耐甲氧西林葡萄球菌及异质性万古霉素中介的检测与分析 FREE [J]. 中国感染控制杂志, 2010,9(2): 89-92
12. 董晨晓1，宋诗铎1，王 悦1，门 昆2.43株临床铜绿假单胞菌 exoS、exoU 基因的携带及其耐药性 FREE [J]. 中国感染控制杂志, 2010,9(2): 93-96
13. 孙雪皎，王豫平.鲍曼不动杆菌肺部感染的临床特点及耐药性分析 FREE[J]. 中国感染控制杂志, 2010,9(2): 114-117
14. 储从家，孔繁林，吴惠玲.990株临床非发酵菌的种群分布及耐药谱分析 FREE[J]. 中国感染控制杂志, 2010,9(2): 121-124
15. 李翠红，易爱华，曾咏红，朱小英.产ESBLs铜绿假单胞菌耐药性分析 FREE[J]. 中国感染控制杂志, 2010,9(2): 130-131