

论著

肠杆菌科耐第三代头孢菌素临床株中ISCR1元件与ESBLs基因的关系

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摘要:

目的了解某地区肠杆菌科耐第三代头孢菌素临床株中携带新型可移动遗传元件插入序列共同区域(ISCR1)的情况及其与超广谱β 内酰胺酶(ESBLs)基因的关系。方法以最低抑菌浓度(MIC)法检测细菌耐药表型;双纸片扩散法进行ESBLs确证试验;聚合酶链反应(PCR)、单链PCR构象的多态性(PCR SSCP)、DNA序列分析检测ISCR1基因和SHV、TEM、CTX M ESBLs基因;PCR mapping检测ISCR1与ESBLs基因的关系。结果83株肠杆菌科耐第三代头孢菌素临床株中,17株携带ISCR1元件。携带ISCR1元件的菌株中,2株大肠埃希菌(EA791、EA1367)、3株阴沟肠杆菌(EC1322、EC1342、EC553)及1株产酸克雷伯菌K386临床株ESBLs确证试验阳性,其中EA791、EC553及K386携带CTX M 1组ESBLs基因;EA1367同时携带CTX M 1组和CTX M 9组ESBLs基因;EC1322、EC1342携带SHV 12型ESBLs基因;6株细菌均携带TEM型基因,经PCR SSCP分析显示均为TEM 1,但经PCR mapping显示其ISCR1元件下游未连接ESBLs基因。结论该地区耐第三代头孢菌素临床株中存在ISCR1元件,尚未发现菌株携带的ISCR1元件与ESBLs基因的直接联系,此元件可能参与其他耐药基因的水平传播。

关键词: 细菌 肠杆菌科 插入序列共同区域 超广谱β 内酰胺酶 基因 抗药性 微生物

Relation between ISCR1 and ESBLs gene in third generation cephalosporin resistant clinical strains of Enterobacteriaceae

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Abstract:

Objective To study the distribution of insertion sequence common region1(ISCR1) in local third generation cephalosporin resistant clinical strains of Enterobacteriaceae and the relationship between ISCR1 and ESBLs. Methods Antimicrobial susceptibilities were tested by micro dilution broth method; ESBLs phenotypic confirmatory test were performed by double disk diffusion method; ISCR1 gene, SHV, TEM, and CTX M ESBLs genes were amplified by PCR and analysed by single strand conformation polymorphism (PCR SSCP) and DNA sequencing, and the relationship between ISCR1 and ESBLs gene was detected by PCR mapping. Results Among 83 strains, 17 isolates harbored ISCR1 gene, 6 of which were positive in ESBLs phenotypic confirmatory test, including 2 Escherichia coli strains (EA791, EA1367), 3 Enterobacter cloacae (EC1322, EC1342, EC553), and 1 Klebsiella oxytoca (K386). EA791, EC553 and K386 all contained CTX M 1 ESBLs gene; EA1367 contained both CTX M 1 and CTX M 9 group ESBLs gene; EC1322 and EC1342 both contained SHV 12 ESBLs gene; all 6 strains carried TEM ESBL gene which were verified by PCR SSCP. PCR mapping revealed that there's no relation between ISCR1 and ESBLs gene. Conclusion ISCR1 element exist in local third generation cephalosporin resistant clinical strains of Enterobacteriaceae, the study found no evidence of direct relationship between ISCR1 and ESBLs, the element maybe play a role in horizontal transmission of other drug resistant genes.

Keywords: bacteria Enterobacteriaceae insertion sequence common region1(ISCR1); extended spectrum β lactamases gene drug resistance, microbial

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