عنوان مقاله:

Molecular characterization of virulence and antibiotic drugresistance pattern of Acinetobacter baumannii and distribution ofintrasplasmid replicase genes and sequence types

محل انتشار:

بیست و سومین کنگره بین المللی میکروب شناسی ایران (سال: 1401)

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خلاصه مقاله:

Background and Aim : Despite the progress in the antibiotic resistance mechanisms inAcinetobacter baumannii, a more informative knowledge on the genetic characterization isrequired to drive their recent evolution. The present study emphasized on molecular epidemiologyof carbapenem resistance, efflux pumps, porins, biofilm capacity and quorum sensing, andsequence analysis of plasmid replicons.Methods : The study was performed on ۱۱۲ A. baumannii isolates. Antibiotic susceptibility testingwas done by disk diffusion and agar dilution. Presence of oxacillinase and metallo β-lactamasegenes was detected by PCR. The level of expression of efflux pumps and porins was investigatedby Real-time PCR. Biofilm capacity was analyzed using microtiter plate method followed byquorum sensing and virulence related genes. Sequence typing and PCR-based replicon typing wereperformed by PCR.Results : All A.baumannii isolates revealed the presence of gyrB and rpoB genes. Resistance tocephalosporins, carbapenems, fluoroquinolone, trimethoprim-sulfamethoxazole, andpiperacillin/tazobactam was observed in all isolates (considered MDR and carbapenem resistantA.baumannii (CRAB) strains). Resistance to all classes of an tibiotics except colistin andampicillin/sulbactam was observed in ۳۰ A.baumannii isolates (designated XDR strains). Presenceof blaOXA-۵۱-like was a distinct feature. blaOXA-۲۳-like and blaOXA-۲۴/۴۰-like genes wereobserved in most of the strains. Presence of blaNDM and blaIMP were detected in CRAB strainswhile, no CRAB strain was positive for blaVIM, blaSIM, blaGIM and blaSPM. The ISAba۱element was present in the majority of CRAB strains. The real-time PCR showed higher expressionof adeB and adeJ genes while decreased expression level was observed for carO, omp۳۳-۳۶ andoprD porin genes. Biofilm activity was observed at various levels and all isolates were positive forbfmSR, csuE, pgaA, abaI and pgaD while, bap and bla-PER۱ were not detected by all the isolates.All isolates were also positive for the Type I fimbriae, PilT motility related genes and ompAvirulence gene. Sequence-based typing revealed all isolates belonged to European (EU) clone II.Replicase typing showed rep۶ and rep۲ genes had highest

frequency.Conclusion : Presence of virulence feature in majority of clinical isolates confirms the endemicityof A.baumannii and appraise the nosocomial nature of the bacteria. Predominance of multipleCRAB strains is an .alarming concern

کلمات کلیدی:

Acinetobacter baumannii; Carbapenem resistance genes; molecular epidemiology;Biofim; Virulence; Typing