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Abstract (poster session)

In vivo potential transfer of genes involved in SH2 production in Escherichia coli isolates implicated in a bacteraemic pyelonephritis

V. Estepa, C. Aspiroz, Y. Sáenz, M. de Toro, C. Lozano, B. Fortuño, C. Torres* (Logroño, Zaragoza, ES)

Objective: The aim of this work was to characterise two multiresistant PFGE-related E. coli isolates recovered from a same blood culture of an elderly patient with bacteremic pyelonephritis. One isolate (C2535) was SH2-producer (SH2+), and the other one (C2534) non-SH2-producer (SH2-). Methods: Identification of isolates was performed by microbiological and molecular methods. SH2 production was detected in Kligler´s iron, Triple Sugar Iron agar medium and API20 system. Molecular typing of isolates was carried out by MLST and PFGE-XbaI. Susceptibility testing to 20 antibiotics was performed by Microscan® and by disk diffusion method (CLSI). Beta-lactamase genes and other 22 resistance genes were analysed by PCR. Mutations in GyrA and ParC proteins, integron characterization, phylogenetic group determination, as well as plasmid replicon typing (PBRT) were performed by PCR and sequencing. Transfer of SH2+ character was assayed by conjugation (receptor E .coli CHS26). Number, size and genetic characterization of plasmids were analysed by PFGE-S1 and subsequent hybridization with specific probes. Results: E. coli strains C2534 and C2535 showed indistinguishable PFGE-patterns, and belonged to ST448 and phylogroup B1. C2534 was SH2- and C2535 was SH2+. Both strains were resistant to ampicillin, nalidixic-acid, ciprofloxacin, chloramphenicol and streptomycin, whereas C2535 showed additional resistance to co-trimoxazole, tetracycline, gentamicin, tobramycin, kanamycin, and sulphonamides. Both strains showed amino acid changes in GyrA (S83L and D87N) and ParC (S80I) proteins, and presented floR and strA-strB genes. In addition, sul2, tet(A), aac(3)-II, and sul3 genes and also a class 1 integron (intI1-aadA22-qacED1-sul1) were detected in SH2+ C2535 strain. C2534 and C2535 carried plasmids type IncI1 and IncW, and C2535 also IncY. Three types of transconjugants were obtained from C2535. Two of them acquired the SH2+ character, the tet(A) gene and harboured the plasmids IncI1, IncW and IncY. One of these SH2-positive transconjugants also acquired the integron structure. The tet(A) gene hybridized in a 135kb plasmid in E. coli strain C2535. Conclusion: E. coli can become SH2-producer by plasmid acquisition that also co-transferred the tet(A) gene. This transference could happen in vivo in the course of an infection and could difficult the correct identification of E. coli.