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CLONAL DYNAMICS OF CLINICALLY-RELEVANT MULTIDRUG RESISTANT SALMONELLA ENTERICA SEROTYPE 4,[5],12:I:- CIRCULATING IN EUROPE IN THE LAST DECADE

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Background

Salmonella 4,[5],12:i:- has become a new epidemic serotype in Europe associated with human infections, being the identification/tracking of its clones crucial to contain their spread.

Objectives

We assessed the trends in *S.* 4,[5],12:i:- clones distribution and their association with antibiotic and metal resistance/tolerance genes in Portuguese isolates. Results were also compared with previous data from the last decade (2002-2010).

Methods

S. 4,[5],12:i:- isolates (n=158), confirmed by PCR (*fliB-fliA*/*fljB*), from different sources (clinical/food) and regions of Portugal (2010-2014) were analyzed. They were screened for sulfametoxazole resistance genes (*sul1-sul2-sul3*) and other class 1 integrons genes (*intI1*, *qac* and gene cassettes) by PCR. Detection of metal tolerance genes [copper (*pcoD*), silver/copper (*silA*) and mercury (*merA*)] and other antibiotic resistance genes by PCR, susceptibility to 10 antibiotics [ampicillin (A), chloramphenicol (C), gentamicin (G), kanamycin, nalidixic acid, ciprofloxacin, streptomycin (S), sulfametoxazole (Su), tetracycline (T) and trimethoprim (Tr)] (CLSI/EUCAST) and clonality by PFGE were performed in representative isolates.

Conclusions

We detected the presence of the 3 clones currently circulating in Europe: i) 'European clone" (75%; *sul2* and absence of *intI1/sul1*/qac*Edelta1;* mostly ASSuT-*bla*$_{TEM}$-*strA-strB-sul2-tetB* and carrying *pcoD*+*silA*+*merA*), which has expanded throughout this study period; ii) 'Spanish clone" [6%; *intI1*; *qacEdelta1+qacH;* mostly AC(G)SSuTTr-*bla*$_{TEM}$-*cmlA-floR-(aac(3)-IV)-aadA-sul1-sul2-sul3-tetA-dfrA12* and carrying *merA-silA*] and iii) 'Southern-European clone" (1%; *intI1*; *qacH;* CSSuTTr-*cmlA-aadA-strA-strB-sul3-tetB-dfrA12*) mostly with similar MDR and/or PFGE-types described since 2002. A marked decreased frequency of Spanish and Southern-European clones was observed contrasting with the expansion of the European clone characterized by ASSuT-phenotype and copper/silver/mercury tolerance genes, which might facilitate adaptation and success of these strains.