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Abstract (poster session)

High antibiotic resistance patterns of *Escherichia coli* in hospital wastewater in Nicaragua

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Objectives: The emergence of antibiotic resistant bacteria presents a major threat to public health because it reduces the effectiveness of antibiotic treatment, leading to increased morbidity, mortality and health care expenditure. Resistant bacteria found in the aquatic environment may disseminate among the population and the genes conferring resistance may be introduced in the natural bacterial ecosystems. The aim of this study was to determine the antibiotic resistance patterns of *Escherichia coli* isolates from different aquatic environmental sources in León, Nicaragua. **Methods:** Antibiotic resistance patterns were studied among 493 *E. coli* isolates from different aquatic sources collected through October 2008 to May 2009 in León, Nicaragua. The following antibiotics were tested: ampicillin, amoxicillin-clavulanic acid, cefotaxime, ceftazidime, ceftriaxone, ciprofloxacin, chloramphenicol, gentamicin, nalidixic acid and trimethoprim-sulfamethoxazole by the agar dilution method. Phenotypic detection of extended-spectrum beta-lactamase (ESBL) was analysed using the Etest® system. All ESBL positive *E. coli* strains were screened for the resistance genes by PCR. To identify the beta-lactamase genes, sequencing was performed. **Results:** High levels of antibiotic resistance were found in *E. coli* isolates in all hospital sewage water samples and in 8 of 87 well water samples. Among the resistant isolates from the hospital sewage, ampicillin, chloramphenicol, ciprofloxacin, nalidixic acid, trimethoprim-sulfamethoxazole showed the most common multi-resistance profile. *E. coli* producing ESBL and harbouring the genes for CTX-M enzymes were detected in one of the hospital sewage samples and in 26% of the resistant isolates from the well water samples. CTX-M-9 group was more prevalent in *E. coli* isolates from the hospital sewage samples and CTX-M-1 group in the well water samples. **Conclusion:** The presence of antibiotic resistant *E. coli* strains was frequent in the environmental water samples. Isolates carrying the CTX-M group of enzymes have become one of the main public health concerns due to their ability to be involved in nosocomial and community acquired infections. In the present study, it was found that CTX-M-15 and CTX-M-9 were the specific beta-lactamases present in the *E. coli* isolates. Our results suggest that multi-resistant ESBL-producing *E. coli* are widely spread in hospital sewage water and in some well water samples in Nicaragua.