P0442

Paper Poster Session II

Antibiotic use and resistance - interventions and observations

Failure of the intervention to control infections with extended-spectrum beta-lactamase-producing *Klebsiella pneumoniae* (ESBLKP) with a decrease of cephalosporin consumption

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Objective. The decrease of cephalosporin use was described as an effective intervention in decreasing the incidence of infections caused by ESBLKP. In response to a sustained increase in the infections caused by ESBLKP, a multifaceted antibiotic stewardship intervention aimed to the decrease cephalosporins was carried out at a large medical unit (~25,000 admissions a year) of a teaching hospital. Methods. The intervention started in January 2010. All cephalosporins except the first generation were restricted and could only be prescribed after the authorisation by an infectious disease (ID) physician. Other antibiotic treatment options for most common infections were communicated to the prescribers by personal communication with an ID physician, educational courses were organised in some wards. The period between January 2008 and December 2013 was analysed. Monthly data on new cases of infection with the ESBLKP were obtained from the database at the Institute of Microbiology and Immunology. Antibiotic consumption was measured monthly using Anatomical Therapeutic Chemical classification system and defined daily doses (DDD) per 100 bed-days. The intervention effect was analysed with interrupted time series (ITS) regression analysis. Results. In the pre-intervention period the mean total cephalosporin consumption was 12.0 DDD per 100 patient-days and it dropped to 2.9 DDD per 100 bed-days after the intervention. The effect was most prominent for the third generation cephalosporins (7.9 to 1.5 DDD per 100 patient-days). ITS analysis showed statistically significant decrease of the level of total cephalosporin use ($p<0.001$), the second generation use ($p=0.002$), and the third generation use ($p<0.001$). There was no change in the first generation cephalosporins, but they represented only 1.3% of total cephalosporins. For the fourth generation cephalosporins a decreasing trend was observed before the intervention. Total antibiotic consumption showed a statistically significant decreasing trend after the intervention (<0.001). There was no change in the consumption of piperacillin-tazobactam. The consumption of co-amoxiclav showed an increasing trend before intervention and decreasing trend after the intervention ($p=0.002$). The level of carbapenem and fluoroquinolone use increased significantly after the intervention ($p=0.005$ and $p=0.002$). After the intervention, the consumption of carbapenems decreased gradually ($p=0.003$), the consumption of fluoroquinolones remained stable. The incidence of ESBLKP infections in 2008 and 2009 was 0.15 per 1000 patient-days. The ESBLKP rate (ESBLKP/all *K.pneumoniae* clinical isolates) was 10.6 %. In 2013 the incidence of ESBLKP infections was 0.24 per 1000 patient-days, and the rate increased to 0.15, but the changes were not statistically significant. Conclusion. The intervention was successful in controlling the prescribing of cephalosporins, but there was no effect on ESBLKP infections.