039

HOW COMMON IS ESBL URINARY TRACT INFECTION (UTI) IN CHILDREN IN A UK REGION?

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Aim of the study: ESBL-producing Gram negative bacilli (ESBL) are resistant to most beta-lactam antibiotics including third-generation cephalosporins, quinolones and aminoglycosides. This resistance is plasmid-borne and can spread between species. Clinical and infection control management of infected or colonised patients is challenging, especially in children with recurrent UTIs and complex urological abnormalities, with limited antibiotic options. How big is this risk?

Methods: A retrospective review, from April 2014 to November 2015, of the microbiology database was performed, documenting date of pure isolates species in urine, pyuria, ESBL growth and patient demographics. Data analysis was by ANOVA, Chi square and Mann-Whitney U-test as appropriate, $p < 0.05$ taken as significant.

Main Results: Analysis of 9418 urine samples revealed 2619 with pure isolates, 1577 with a pyuria of >10x10^6WC/L. 136 urine cultures in 79 patients grew purely ESBL. In our region, 5.2% of urine pure isolates were ESBL and strikingly 9.5% of patients with pyuria >100x10^6WC/L had ESBL, whereas only 22/1032(2.1%) with no pyuria had ESBL(table1), $p<0.0001$.

Urology patients had 86/136(63%) ESBL positive cultures. These represented 86/315(27%) of all positive cultures for urology patients vs. 50/2267(2.2%) for all other specialties, $p<0.0001$.

Possible ESBL transmission between organisms occurred in 3, all on prophylactic antibiotics. The incidence of plasmid transfer in our region was 1 per 45 children carrying ESBL (or per 1 million total children) every 6 months.

The monthly incidence of ESBL isolates rose from 9.5(7-15.5) to 13.5(12-17-5), 2014 to 2015, but not significantly, $p=0.1$

Conclusion: This study is the first to document the incidence of ESBL in children (5% of isolates in our region), and the first to estimate the frequency of possible plasmid transmission between bacterial species in children (1 per million children every 6/12). This quantifies the risk of ESBL infection/colonisation, especially to urology patients, and mandates better antibiotic stewardship.

Pyuria	All Pure growth	Urology	ESBL Pure growth	Urology	% ESBL
< 10 x 10^6/L	1042		22		2.1%
10 - 30 x 10^6/L	522		23		4.4%
30 - 100 x 10^6/L	468		35		7.5%
> 100 x 10^6/L	587		56		9.5%
Total	2619	352	136	80	5.2%

Table 1: Degree of pyuria in all pure growth UTIs and the subset with ESBL