Background. Childhood urinary tract infection (UTI) may cause increased major morbidity and long-term clinical consequences. Extended-spectrum β-lactamase (ESBL) is produced by the members of the Enterobacteriaceae family, which are the primary infectious agents that cause UTI in children. Isolation of ESBL-producing Enterobacteriaceae (ESBLE) typically occurred in healthcare facilities; however, the incidence of community-associated (CA) UTIs due to ESBLE-E has increased worldwide. It has led to an increase in the use of carbenapems. In this study, we determine the characteristics of community-onset UTIs caused by ESBLE-E in children to suggest non-carbenapem options for the treatment of childhood UTIs due to ESBLE-E in order to preserve carbenapems.

Methods. A total of 2,157 isolates of ESBLE-E were collected from children below 18 years old who were clinically certified UTI or urosepsis between January 2008 and August 2018 at tertiary university hospital in Korea. Their electronic medical records were retrospectively reviewed. Long-term healthcare facility stay within the preceding month and isolates recovered more than 72 hours after hospitalization were the criteria of healthcare-associated (HA) infection.

Results. The most common isolates were E. coli (84.2%) followed by K. pneumoniae (15.8%). CA UTIs due to ESBL-E showed much higher sensitivity to TZP compared with HA K. pneumoniae. Of total ESBLE-E, the antimicrobial resistance rate to aminoglycoside such as amikacin and gentamicin showed full sensitivity with the study period; furthermore, a rate of resistance to TZP has been decreasing over the years.

Conclusion. Identifying antibiotic susceptibility patterns of ESBLE-E is a useful guide for treatment strategy of UTI. This study showed that there are non-carbenapem options for the treatment of CA ESBLE UTI in children.

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