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**Increasing prevalence of ESBL producing multidrug resistance bacteria in patients with acute pyelonephritis in Daejeon, Korea, 2010-2018**

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**Objectives:** Acute pyelonephritis (APN) is known to be the most complicated, severe urinary tract infection. It is not uncommon to experience the initial empirical antibiotic treatment failure of APN due to the increasing prevalence of ESBL producing bacteria. In this study, we investigated the microbial etiologies of acute pyelonephritis and resistance to antibiotics in APN.

**Methods:** We retrospectively reviewed microbial etiologies and resistance among patients who were admitted to Konyang University Hospital with APN from 2010 to 2018. Two blood cultures at different sites, and urine culture were performed at the time of admission. Statistical analysis was performed using SPSS 18.0 version (SPSS Inc., Chicago, IL, USA).

**Results:** The total number of patients with APN was 461, and *Escherichia coli* (57.3%) was the most common pathogen followed by *Klebsiella pneumonia* (2.8%), *Enterococcus* (2%), *Proteus* (0.9%), *Enterobacter* (0.6%) and *Pseudomonas* (0.5%). The rate of ESBL production has steadily increased over 9 years from 6.3% to 29.8%. Multivariate analysis showed that female sex (OR 2.446; 95% CI 1.158-5.169), rural residence (OR 1.850; 95% CI 1.002-3.416), dementia (OR 2.468; 95% CI 1.166-5.223) and Foley catheterization (4.317; 95% CI 1.019-18.297) were risk factors for acquiring ESBL producing bacteria.

**Conclusions:** Although quinolone and 3<sup>rd</sup> cephalosporin are recommended for empirical treatment of APN, there is a high risk of treatment failure due to the significant increase of ESBL producing bacteria in the community. Antibiotic therapy for APN should ideally be based on local patient characteristics and their antibiotic susceptibility profiles.