THE AETIOLOGIC AGENTS AND THEIR ANTIMICROBIAL RESISTANCE IN FIRST-TIME AND RECURRENT PYELONEPHRITIS

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Figure 1. Distribution of analysed cases

Background and Aims

Acute pyelonephritis (AP) is common in childhood. Local antimicrobial resistance (AR) should determine empirical therapy, taking in consideration it might differ between first-time acute pyelonephritis and recurrent pyelonephritis (RP). The aims of this research were to determine whether the aetiological agents as well as their AR to cefuroxime, nitrofurantoin and cefotaxime differed in first-time and RP.

Method

In this retrospective, descriptive, quantitative study children, admitted to a tertiary children's hospital with the diagnosis of acute pyelonephritis (AP) or exacerbation of chronic pyelonephritis (RP) from 1st January 2015 to 31st December 2016, were included.

Results

401 cases of AP were analysed, 33% (n=133) were male. 31% (n=124) of the cases were first-time AP and 24% (n=95) – RP, the rest – unspecified (Fig.1). In the 219 cases that had the number of occurrence specified, the diagnosis was confirmed by a positive urine culture (PUC) in 49%. The aetiology differed significantly between first-time and RP, with *E. coli* causing 77% (n=40) and 53% (n=29) and other single agents causing 4% (n=2) and 31% (n=17), (p=0,001), respectively; multiple agents caused 19% (n=10) and 16% (n=9) of cases, respectively (Figs. 2,3). The AR, when determined, was 0% and 23% (n=10) for cefuroxime, (p<0,001), 2% (n=1) and 18% (n=9) for nitrofurantoin (p=0,007), 0% and 23% (n=10) for cefotaxime (p<0,001) in first-time and RP, respectively (Fig. 4).

Conclusion

Aetiological agents other than *E. coli* are more frequent in RP than first-time AP. Antimicrobial resistance to cefuroxime, nitrofurantoin and cefotaxime increases with RP.

Abbreviations

AP – acute pyelonephritis
AR – antibacterial resistance
PUC – positive urine culture
RP – recurrent pyelonephritis

Figure 2. Aetiology of first time acute pyelonephritis

Figure 3. Aetiology of recurrent pyelonephritis

Figure 4. Antimicrobial resistance in first-time and recurrent pyelonephritis

Table 1. Number of first-time and recurrent pyelonephritis cases in which the specific antibacterial resistance was determined.

Antibiotic	First-time AP	RP
Cefuroxime, n	44	43
Nitrofurantoin, n	52	50
Cefotaxime, n	48	44