

MEETING ABSTRACT

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Heterogeneous penetration of cefpirome and moxifloxacin into abscesses after simultaneous administration in humans

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Background

Abscesses are often successfully treated with antimicrobial agents when drainage is not feasible, but appropriate data on antibiotic abscess penetration in humans are missing. This study aimed at evaluating and comparing pharmacokinetics of cefpirome and moxifloxacin in the same abscesses to evaluate their eligibility for this indication.

Methods

After simultaneous administration of 2 g cefpirome and 400 mg moxifloxacin to patients drug levels were measured in plasma over 8 h, and in differently located abscesses (n = 12) at incision. A population pharmacokinetic analysis and a two-stage model were applied. The impact of abscess morphology and plasma levels on antibiotic abscess penetration was investigated.

Results

At incision performed 158 ± 112 min after administration, cefpirome concentrations in abscess ranged from below the limit of quantification to 47 mg/L (8.4 ± 14.1 mg/L), and moxifloxacin concentrations ranged from below the limit of quantification to 9.2 mg/L (1.9 ± 3.4 mg/L). Relative to plasma, abscess concentrations of moxifloxacin were significantly higher than of cefpirome ($p = 0.037$). Inhibitory concentrations of both antibiotics reported for abscess-relevant bacterial species were reached in several, but not in all abscess observations. Antibiotic abscess penetration could not be

adequately explained considering covariates such as pH of abscess fluid, or the ratio of surface area to volume of abscesses, linked to plasma pharmacokinetics.

Conclusions

Cefpirome and moxifloxacin were detectable in most abscesses after a single dose and might be eligible if conservative treatment is required. However, antibiotic abscess penetration was highly variable and unpredictable, and clinicians should anticipate insufficient drug levels in some cases.

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