Pharmacokinetics and Safety of Intravenous Solithromycin in Children ≥6 Years of Age

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Background: Solithromycin is a new fluoroketolide antibiotic in clinical development for use in adults and children. We performed a phase 1 pharmacokinetics (PK) and safety study in children ≥6 years of age.

Methods: We enrolled children and adolescents with suspected or confirmed bacterial infections and administered intravenous solithromycin as add-on therapy: 6–11 years, 7 mg/kg daily; 12–17 years, 6 mg/kg daily (up to 400 mg) for up to 5 days. We collected PK samples at end of infusion, 2–4, 8–10, and 23–24 hours after the first and multi-dose administration. We performed a noncompartmental analysis and compared exposure to adult values.

Results: Eight children (median [range] 7 years [6–10]; weight 26 kg [11–36]) and 10 adolescents (age 14.5 years [12–17]; weight 53 kg [29–69]) completed the study. The median (range) daily dose was 183 mg (79–253) and 317 mg (172–400) in children and adolescents, respectively. Solithromycin exposure on Day 1 and Days 3–5 are shown in Table 1. The most common drug-related adverse events were infusion site pain/reaction (4), mild diarrhea (3), and headache (1). All children received concomitant medications.

Table 1. Median (range) solithromycin PK estimates.

Day	Parameter	6–<12 years (n=8)*	12–<17 years (n=10)*	Adult Value (n=10)*,†
1	C_{MAX} (µg/mL)	1.9 (0.8–4.7)	1.8 (1.2–8.4)	2.2 (1.6–3.0)
	AUC_{0-24} (µg*h/mL)	8.3 (3.8–22.1)	7.8 (3.8–30.4)	5.3 (3.9–7.0)
3/4/5	C_{MAX} (µg/mL)	2.8 (1.0–8.1)	2.3 (1.2–7.7)	2.7 (2.2–3.5)
	AUC_{0-24} (µg*h/mL)	10.6 (2.7–18.4)	12.3 (8.2–19.9)	12.1 (5.8–18.8)

*Not all participants contributed data because of samples observed below the quantification limit or partial data.
†Adult data taken from phase 1 studies (400 mg).

Conclusion: Solithromycin exposure and safety in a small cohort of children and adolescents was comparable to that reported in adults.

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