POSTSURGICAL PAIN IN CHILDREN LESS THAN 2 YEARS OLD: FIRST EXPERIENCE WITH TAPENTADOL ORAL-SOLUTION

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Introduction: Very few approved pain medications for very young children are available.

Tapentadol is a centrally acting analgesic with µ-opioid receptor agonist and noradrenaline reuptake inhibition properties. Tapentadol is indicated for the relief of moderate to severe acute pain in adults and tapentadol oral solution has recently been approved in Europe for children from 2 to less than 18 years of age.

Background and aims: Pediatric clinical trials are very challenging. In this trial, the pharmacokinetic, safety and efficacy profile of tapentadol oral solution (os) was investigated following a single dose administration

Methods:
• Population: post-surgical pain patients (<2 years old) requiring opioid treatment.
• Dose selection:
• Based on physiologically based pharmacokinetic modelling (PBPK) using data from adults and older children.
• Goal to reach an exposure in children similar to adults at the efficacious dose range of 50 -100 mg with tapentadol-IR
• Parameters measured:
• Serum concentrations of tapentadol and its metabolites.
• Pain using the FLACC scale.
• Safety laboratory, vital signs, oxygen saturation, and ECGs.
• Treatment Emergent AE’s.

Results:
• 19 patients included in the safety analysis and 18 patients in the pharmacokinetic set.
• Serum tapentadol concentrations observed in children are within the range in adults.
• 8 out of 19 treated patients experienced 16 treatment emergent adverse events (TEAEs). The most common TEAEs were decreased oxygen saturation (18.8%), vomiting and pyrexia (12.5% each).
• The safety profile was consistent with that in other pediatric patients and in adults.
• Pain intensities decreased after treatment with tapentadol-os.

Conclusions:
• A single, oral, weight-adjusted, dose of tapentadol oral solution administered to children < 2 years old, produced concentrations of tapentadol in serum that are within the range observed in adults after single-dose administration of therapeutic doses of tapentadol immediate release (IR) 50 mg to 100 mg.
• A decrease in postoperative pain following tapentadol oral solution administration was already observed after 15 minutes.
• Tapentadol oral solution in children aged from birth to less than 2 years old was generally well tolerated.
• The safety profile in the studied population was consistent with the known safety profile for tapentadol observed in other pediatric trial subjects and adults. No new adverse drug reaction was identified.

Figure: Incidences of TEAEs

*Per convention, oxygen levels below 92% for at least 60 seconds were to be reported as TEAEs. All were transient.

Figure: Tapentadol serum concentrations

Dots represent the actual measurements in children

FLACC = Face, Legs, Activity, Cry, Consolability scale; SD = standard deviation; h = hours; N = number of subjects.