Early Oral Therapy for Pediatric *Streptococcus anginosus* Purulent Intracranial Infections: A Single Center Experience

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BACKGROUND

Pediatric *Streptococcus anginosus* intracranial pyogenic are commonly treated with prolonged intravenous (IV) antibiotics, exposing patients to risks of a long-term central catheter. Antibiotics with high oral bioavailability, such as levofloxacin, may allow early oral transition.

METHODS

- Retrospective chart review from 1/2004 to 2/2019
- Inclusion criteria: radiologic evidence of an infected parenchymal, subdural, or epidural fluid collection AND a positive culture for *S. anginosus* from an intracranial source, specific extracranial sources (sinus, scalp, orbit), or blood
- Primary endpoint: oral antibiotic failure defined as worsening infection on oral therapy requiring re-initiation of IV therapy
- Comparisons done using Fisher's exact test with significance set at p:< 0.05)

RESULTS

- 57 patients transitioned to oral therapy during treatment; **none had oral antibiotic** failure
- Two patients required re-introduction of IV therapy (one for medication non-adherence; one for adverse reaction to levofloxacin)
- Patients transitioned in the first 28 days were more likely to have an epidural collection, less likely to have a subdural collection, less likely to have a brain abscess, and less likely to have needed a source control procedure
- Oral levofloxacin was used in 54 of the 57 patients

CONCLUSION: Early Transition to Oral Therapy for Pediatric *Streptococcus anginosus* Purulent Intracranial Infections was Effective and Well-Tolerated

Figure 1: Outcomes of Oral Transition By Timing of Oral Transition

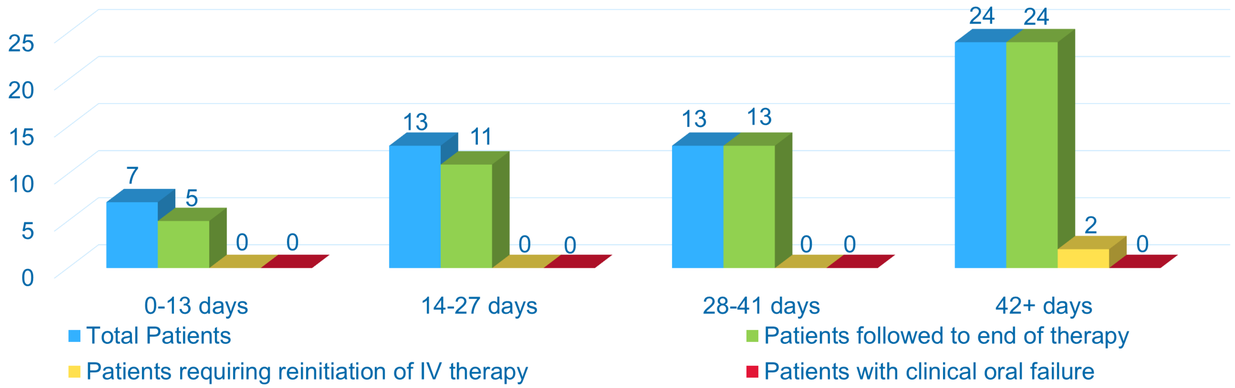

Figure 2: Contributing Reasons for Oral Transition By Timing of Oral Transition

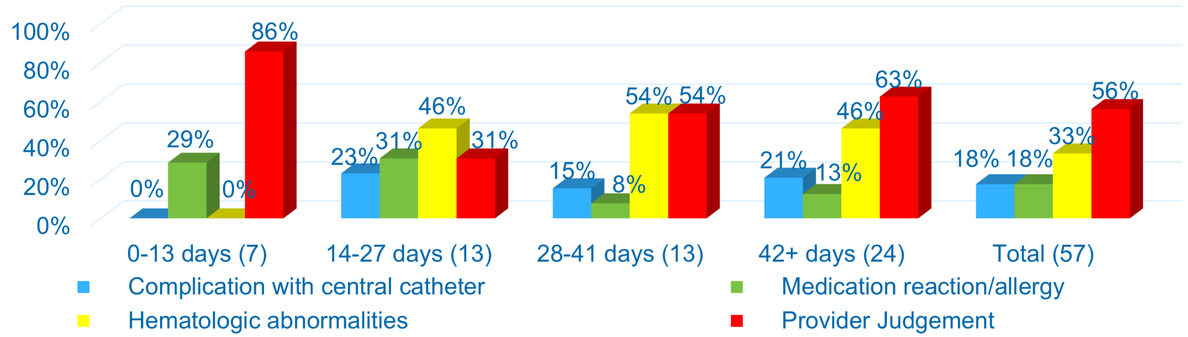

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Table 1: Patient and Disease Characteristics

Length of total therapy (average days)	83.2
Age (average years)	11.1
Sex (percent female)	35%
Race (percent)	
Asian	4%
Black or African American	7%
White	74%
Other	12%
Unknown	4%
Ethnicity (percent)	
Hispanic	0
non-Hispanic	77%
Other	0.0
Unknown	4%
Intracranial Diagnosis (percent)	
Brain Abscess	30%
Subdural Abscess/Empyema	40%
Epidural Abscess/Empyema	60%
Presumed Source of intracranial infection (percent)	
Sinogenic	72%
Otogenic	7%
Trauma	4%
Hematogenous/unkown	18%
Co-Diagnoses	
Orbital Absecss	16%
Osteomyelitis	25%
Sinus Thrombosis	16%
Co-Pathogens	
Methicillin sensitive *Staphylococcus aureus*	16%
Methicillin resistant *Staphylococcus aureus*	0%
Coagulase negative Staphylococci	25%
Other Streptococcus species	11%
Gram negative aerobic bacteria	14%
Anaerobic bacteria	14%
Candida species	4%
Number source control procedures (percent)	
Zero	0.3
One	51%
Two	14%
Three	4%
Laboratory Data	
Average highest C-reactive protein (mg/dl)	14.6
Average C-reactive protein before oral transition	0.9
Average highest Erythrocyte sedimentation rate (ESR)	65
Average ESR before oral transition	18