Clinical Indications and Risk Factors for Repeat Surgical Drainage in Pediatric Septic Arthritis

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INTRODUCTION

- Pyogenic bacterial arthritis is a serious infection in children
- Prompt diagnosis and treatment is necessary to avoid severe long-term sequelae
- Antibiotic therapy combined with surgical drainage and irrigation is standard
- A single operation to drain an affected joint once is effective, but multiple procedures may be needed in more severe infections
- There is little information in the literature about clinical factors that impact the need for repeat surgical washout in cases of septic arthritis.

METHODS

- ICD codes used to identify cases of osteoarticular infection admitted from 2010-2015
- Only cases with septic arthritis where surgical drainage was performed were included
- 811 cases reviewed, 84 patients included in this study
- Data related to presentation, hospital course, and outcomes were collected
- Clinical factors of patients who received one surgical procedure were compared to those who underwent multiple operations.

RESULTS

- 28 patients (35% of total) underwent multiple surgical for a total of 70 procedures
- Most common reason for repeat surgery was clinical judgment of orthopedic surgeon (see Table 1)
- Patients who underwent repeat drainage were significantly older than those who underwent 1 surgical drainage (Table 2)
- There was no difference in other clinical characteristics at presentation
- There was no difference in long-term clinical outcomes between groups

Table 1: Clinical indications for repeat surgical debridement in pediatric septic arthritis

Indication for repeat surgery[a]	Total number of procedures (n=70)[a]
Continued fever	14 (20%)
Continued pain	16 (23%)
Refusal of use limb	8 (11%)
Persistent elevation of CRP	10 (14%)
Persistent elevation of WBC count	5 (7%)
Planned incision and drainage[b]	19 (27%)

[a] Please note that surgeries could have more than one indication
[b] As indicated in Orthopedic Surgery documentation

Table 2: Comparison of characteristics between those undergoing one surgical drainage and those requiring multiple washouts

Characteristic	Single procedure (n=56)	Repeat operations (n=28)	P value
Age at Presentation (years)	6.4 ± 0.6	9.29 ± 0.8	P = 0.007
Number of male patients	38 (67.9%)	22 (78.6%)	NS
WBC count at admission ($x10^3$/mcL)	13.3 ± 0.8	12.71 ± 1.0	NS
CRP at admission (mg/dL)	7.9 ± 1.1	16.44 ± 3.4	P = 0.004
ESR at admission (mm/hr)	41.9 ± 4.0	45.6 ± 4.0	NS
Days of symptoms prior to starting antibiotics	4.4 ± 0.4	5.5 ± 0.7	NS
Infected with MRSA	3 (5.4%)	11 (39.3 %)	P < 0.001
Patients that developed chronic sequelae[a]	2 (3.6%)	2 (7.1%)	NS

[a] Defined as chronic infection, leg deformity, leg length discrepancy or chronic limp

CONCLUSION

- Clinical judgment was the most common cause of repeat procedure, followed by persistent pain/fever
- Patients who underwent multiple procedures were older and had a significantly higher CRP at admission
- MRSA infection was associated with need for repeat surgical washout
- More research is needed to able to predict which factors effect severity of bacterial arthritis

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