Defining Variability in the Evaluation and Management of Children with Chronic Osteomyelitis

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Abstract
Pediatric chronic osteomyelitis (COM) is an uncommon, poorly defined, debilitating disorder often requiring multiple surgeries and prolonged antibiotic courses. Serious long-term sequelae may occur. As accepted diagnostic criteria do not exist, assessments of disease incidence, medical/surgical approach to management and outcomes are lacking. In a national survey of 162 pediatric infectious disease physicians through the Emerging Infections Network of the Infectious Disease Society of America, tremendous variability in diagnostic approaches and management were noted. Formal diagnostic criteria and guidelines for medical/surgical management by pathogen/site of infection and presence of foreign material are needed to optimize care and outcomes. This study highlights the need for multi-center, prospective studies of COM.

Methods
14-question, confidential, web-based survey link was distributed to 387 PID physician members of the EIN between April 10 and May 22, 2022.

Respondents were characterized by region, years of experience since fellowship and practice setting.

Multiple choice and “choose all that apply” questions to assess diagnostic approach, comfort diagnosing and treating COM, and standard surgical and antibiotic management.

Conclusions
• Respondents considered COM to be a heterogeneous entity arising from multiple causes
• We found substantial variability in both diagnosis and management of COM among respondents
• Standardized definitions and prospective studies to guide management for each presentation of COM are needed

If you are interested in collaborating as part of a multi-center cohort study to further understand and define diagnosis and management of COM, please contact us (WDehority@salud.unm.edu)!

Background
• Chronic osteomyelitis (COM) in children is rare, but can have serious consequences and require prolonged therapy
• COM is a heterogeneous entity in terms of etiology, microbiology, and practice, or individual patient characteristics
• No consensus exists regarding a definition & no management guidelines are available

Respondents’ years of experience since fellowship

-5 years 17%
-1-4 years 17%
5-14 years 34%
15-24 years 21%
≥25 years 28%

Respondents’ primary hospital type

University 61%
Community 27%
VA hospital or ODI 7%
Non-university teaching 9%

TREATMENT
Assuming surgical debridement, most treated COM with IV antibiotics for 0-4 weeks before transition to oral therapy

Would not treat with IV 19%
<2 weeks 52%
2-4 weeks 17%
4-6 weeks 13%
≥6 weeks 3%
Other 13%

Assuming surgical debridement, most respondents treated COM with oral antibiotics for 3-6 months

Non-university teaching 52%
6-12 months 14%
3-6 months 32%
1-2 months 6.6%
≥1 year 35%
Other 10%

General Findings

• Substantial variability exists in findings considered necessary for diagnosis
• The majority of respondents care for 0-6 cases of COM each year with a minority caring for > 10 cases

RESPONDENT DEMOGRAPHICS
Respondents predominately mid-career, academic physicians working in USA and Canada

ETIOLOGY
Respondents noted COM is not a single entity

“Nontuberculous disease that seems to require an individualized approach.”
“This is very challenging both because of the wide variety of presentations and the small number of cases. It’s more anecdote than evidence at this point.”
“I think chronic osteomyelitis in children means a wide variety of things to different practitioners. It’s a term in search of a definition.”

With Acute Osteomyelitis

• COM associated with orthopedic implants
• Post-acute COM (progression of acute osteomyelitis to a chronic stage)
• COM associated with a contiguous focus of infection
• COM associated with penetrating trauma
• Chronic Recurrent Non-bacterial Osteomyelitis
• Primary hematogenous COM
• Not sure
• Other

With Post-Acute Osteomyelitis

• Normal or near normal acute inflammatory markers at presentation
• Bone abscess
• Histopathological evidence of chronic inflammatory infiltrate
• Failed course of antibiotics
• Abnormal plain film at presentation
• Prolonged duration of symptoms
• Patient risk factors (e.g. prior trauma, retained orthopedic implant)
• No specific criteria (e.g. clinical gestalt)

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