Chronic Nonbacterial Osteomyelitis:
Cohort Characteristics and Treatment Course at a Single Center

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BACKGROUND

• Chronic Nonbacterial Osteomyelitis (CNO) is characterized by sterile inflammatory lesions of bone
• Ranges from mild, unifocal disease to chronically active and/or recurrent involvement of multiple bones
• Manifests as pain, often with swelling and tenderness
• Primarily affects the skeletally immature
• Reported incidence of 1:1,000,000
• Diagnosis made based on characteristic imaging and biopsy findings

PURPOSE

To describe the clinical characteristics and treatment course of the patients with CNO seen in the multidisciplinary (rheumatology and orthopedic) clinic at Children’s Hospital Colorado (CHCO), one of the largest single center CNO cohorts.

METHODS

We conducted a retrospective review of patients diagnosed with confirmed or suspected CNO between January 19, 2005 and March 5, 2019. Data was collected on 165 patients including clinical presentation, laboratory, radiology, pathology findings, and medications prescribed.

RESULTS

Table 1. Clinical Characteristics.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N=165</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Female</td>
<td>94</td>
<td>57%</td>
</tr>
<tr>
<td>Male</td>
<td>71</td>
<td>43%</td>
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<tr>
<td>Average Age at First Clinical Encounter</td>
<td>9 years (5m – 16y)</td>
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<tr>
<td>Average time from Symptom Onset to Diagnosis</td>
<td>9 months (8d – 6y)</td>
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<tr>
<td>Biopsy Confirmed Diagnosis</td>
<td>117</td>
<td>71%</td>
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<tr>
<td>Multifocal Involvement</td>
<td>116</td>
<td>70%</td>
</tr>
<tr>
<td>Axial Skeleton Involvement</td>
<td>38</td>
<td>23%</td>
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<tr>
<td>Appendicular Skeleton Involvement</td>
<td>154</td>
<td>93%</td>
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</table>

Figure 1. Distribution of regions of involvement in patients with CNO. Percentages are relative to total number of regions in all patients.

Figure 2. Medications prescribed to patients with CNO seen in the CHCO CNO multidisciplinary clinic.

NSAIDs Alone 69% (114/165)
NSAIDs 100% (165/165)
Bisphosphonate 2% (3/165)
TNF inhibitor 5% (9/165)

CONCLUSIONS

• Our multi-disciplinary CNO clinic provides a large cohort of patients to study
• CNO is more common than previously reported
• Increased awareness of CNO is warranted to decrease the time to diagnosis
• More research is critical to determine effective treatment to avoid serious complications including vertebral compression fractures, kyphosis, and possible physical injury
• Recently, consensus treatment plans for the use of methotrexate, tumor necrosis factor alpha blocking biologic agents, and bisphosphonates have been proposed in non-steroidal anti-inflammatory drug (NSAID) treatment failures
• Follow-up of this cohort is required to better understand prognosis and long-term outcomes

REFERENCES