Acute calcific tendinitis of the longus colli muscle: Spectrum of CT appearances and anatomical correlation

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BACKGROUND FROM DAN MURPHY

A friend and colleague felt a bit under the weather for a few weeks, feeling systemically lousy (maybe 4/10), as if having a cold or flu. His temperature was slightly elevated, about 100° F. His neck was stiff and he had a slight increase in temperature. He had another colleague adjust his cervical spine. He continued to feel lousy, and put his neck into a device to improve cervical lordosis, a device he had used numerous times before. Shortly thereafter things became much worse. His symptoms shot up to 9/10-10/10 (the most debilitating pain of his life). His neck became significantly stiff. Palpation of the anterior tubercle of C1 through the open mouth was exquisitely tender, indicating an active inflammatory process. There was a sensation of having something stuck at the top of his throat. The local urgent care physician did nearly nothing, no x-rays or other imaging, only prescribing pain drugs. He sought a second opinion. An upper cervical spine CT was ordered. The initial interpretation was not good: Myositis of the longus colli muscle with possible osteomyelitis into the vertebral body of C2. Immediate referral to the hospital for IV antibiotics was arranged.

The hospital staff radiologist was less sure of the diagnosis, and the antibiotics were put on hold. The new diagnosis was “calcific tendinitis of the longus colli muscle with a retropharyngeal inflammatory process.” Within a day his symptoms had reduced from debilitating 9/10-10/10 to 1/10. He remains well and symptom free weeks later.

KEY POINTS FROM THIS STUDY:

1) Calcific tendinitis of the longus colli muscle is a retropharyngeal inflammatory process that can present acutely with debilitating symptoms. Yet, it is a “benign condition that commonly settles with conservative management despite its rather debilitating symptoms.”

2) Cross-sectional CT imaging appearances of this rare condition can be misleading; yet, the cross-sectional CT imaging appearance confirms the diagnosis.

3) Definitive radiological diagnosis is required to avoid unnecessary and potentially dangerous intervention. Common misleading CT imaging appearances include:
• neoplasm (e.g. rhabdomyosarcoma)
• suppurative retropharyngeal infection
• fracture/dislocation of the cervical spine
• myositis ossificans
• [osteomyelitis]

4) This study presents 3 cases of acute calcific tendinitis of the longus colli muscle, and notes their common characteristics:

• Acute onset of neck pain and stiffness associated with odynophagia [pain on swallowing]

• “Patients complain of rather acute onset of neck pain and stiffness progressing over a period of several days, as well as odynophagia and dysphagia.”

• Reduced range of motion of the occipital region

• Moderate discomfort on swallowing

• Occipital headache

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<tr>
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<th>Case #1</th>
<th>Case #2</th>
<th>Case #3</th>
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<tbody>
<tr>
<td><strong>History of Trauma</strong></td>
<td>No</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td></td>
<td>Came on over 10 days</td>
<td>2 weeks after low-velocity minor whiplash</td>
<td>Worsening After 3 days</td>
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<tr>
<td><strong>Recent Infection</strong></td>
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<tr>
<td><strong>Current Infection</strong></td>
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<td><strong>Low-Grade Pyrexia</strong></td>
<td>Yes 99.5°F</td>
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<td>No</td>
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<tr>
<td><strong>Neck Pain</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>Neck Stiffness</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Unknown</td>
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<td><strong>Dysphagia</strong></td>
<td>Unknown</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>(difficulty swallowing)</td>
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<td></td>
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<tr>
<td><strong>Odynophagia</strong></td>
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<td>Yes</td>
<td>Unknown</td>
</tr>
<tr>
<td>(pain on swallowing)</td>
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<tr>
<td><strong>Feeling of Lump in Throat</strong></td>
<td>No</td>
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</table>
5) Imaging Findings:

- Small flecks of globular calcification in the right longus colli muscle predominantly at the C2–C3 level; the muscle was swollen and edematous throughout most of its extent and a small retropharyngeal effusion was evident.

- A moderate-sized focus of amorphous calcification was demonstrated in the right longus colli muscle centered on the C1–C2 level, which was associated with some edema and local mass effect on the overlying oropharyngeal mucosa.

- This revealed an abnormal area of amorphous globular calcification in the left longus colli muscle at the C1–C2 level and resultant fullness of the left oropharynx.

6) The longus colli muscle extends from the anterior tubercle of the atlas to the level of the T3 vertebral body. It consists of superior (upper oblique), central (vertical) and inferior (lower oblique) fibers.

7) The superior fibers attach the anterior tubercle of the atlas to the anterior tubercles of the transverse processes of C3–C5 vertebrae.

- "It is the superior tendon fibers of the longus colli muscle that are affected in acute calcific tendinitis."

- "It is the superior fibers of the longus colli muscle tendons that are predisposed (at the C1–C2 level) to the typical amorphous calcification."

8) The condition was first described in 1964 and has several synonyms:

- Calcific tendinitis of the longus colli muscle
- Acute retropharyngeal calcific tendinitis
- Calcific prevertebral tendinitis

9) The pathology is a deposition of crystals of calcium hydroxyapatite, creating an "intratendinous calcium granulomatous lesions."

- "Pathological deposition of calcium hydroxyapatite crystals in tendinous and other periarticular tissues is recognised in other areas of the body, but most notably the shoulder in supraspinatus tendinopathy; a similar pathological abnormality has been identified in the wrist, hip and ankle."

10) "There may be limited neck movement and a low-grade pyrexia; mild elevation of the erythrocyte sedimentation rate associated with a mild leukocytosis may be identified infrequently on haematological analysis."
11) A history of recent upper respiratory tract infection or minor neck trauma is variable.

12) “The imaging modality of choice for confirmatory radiological diagnosis of acute calcific tendinitis of the longus colli muscle is CT owing to its enhanced contrast resolution and the multiplanar capabilities.” “MRI detects inflammation involving and surrounding the longus colli muscle but its representation of calcification is inferior to that of CT.”

13) Plain film radiography is helpful, but may miss subtle calcification within the tendon. Plain film radiography may show prevertebral swelling associated with amorphous calcification anterior to the C2 vertebral body.

- “Secondary features can aid radiological diagnosis, most notably small retropharyngeal effusions and edematous swelling of the adjacent prevertebral soft tissues.”

14) The severity of symptoms does not correlate well with the degree of calcium deposition identified on CT.