

CASE REPORT

POST-COVID-19 INFECTION TIETZE'S SYNDROME IN A YOUNG ADULT PATIENT

SAYEEF HOSSAIN KHAN MARK¹, RASIF HOSSAIN KHAN², SHAIMA RAHMAN MISHU³, KHAN ABUL KALAM AZAD⁴

Abstract:

Tietze syndrome is a benign inflammation of one or more of the costal cartilages. The condition is characterized by tenderness and painful swelling of the anterior (front) chest wall at the costochondral (rib to cartilage), sternocostal (cartilage to sternum), or sternoclavicular (clavicle to sternum) junctions. We describe a previously healthy 35 years old gentleman with repeated presentations to the emergency department (ED) with left-sided chest and sternoclavicular pain on a background of recent asymptomatic COVID-19 infection. Labs and imaging subsequently confirmed the diagnosis of Tietze's syndrome. Anti-inflammatory medications and colchicine eventually led to uneventful recovery. This case highlights how Tietze's syndrome — a disorder that is potentially self-limiting, can cause recurrent hospital admission and should be a differential diagnosis of chest pain related to COVID-19.

Keywords: Tietze's syndrome, Costochondritis, COVID-19, nonsteroidal anti-inflammatory drugs, Colchicine, SARS-CoV-2

Received: 28.02.2023

Accepted: 10.04.2023

DOI: <https://doi.org/10.3329/bjm.v34i2.63511>

Citation: Mark SHK, Khan RH, Mishu SR, Azad KAK. Post-COVID-19 Infection Tietze's Syndrome in a Young Adult Patient. *Bangladesh J Medicine* 2023; 34: 155-159.

Introduction:

Tietze's syndrome; a rare inflammatory disorder distinguished by additional chest wall swelling. These benign conditions are often reproducible on palpation¹. Tietze syndrome affects the true ribs and has a predilection for the 2nd and 3rd ribs, commonly affecting only a single joint. The exact cause is often unknown, although it has been associated with few respiratory infections particularly viral. After excluding the other possible serious causes of chest pain, early diagnosis is essential, otherwise it can be stressful for the patient which can lead to recurrent hospital admission. We report a case of a man who presented with left-sided chest and sternoclavicular pain and had confirmed radiologic features of Tietze's syndrome. This is on the background of full COVID-19 vaccination including booster shot and recent asymptomatic infection.

Case report:

A 35-year-old male, businessman presented to the emergency department (ED) in a tertiary care hospital with symptoms of sudden onset of the left-sided chest pain radiating to his neck at home. Chest pain was sharp in nature and was not associated with cough, shortness of breath, palpitation, leg swelling.

He had no significant past medical history except he was tested positive for COVID-19 three weeks ago with uneventful recovery. He was not on any long-term medications, had no history of any other cardiovascular disease or no significant family history.

Initial investigations including routine blood tests, troponin-T, electrocardiogram, and chest radiograph were unremarkable. He was prescribed analgesia (paracetamol and tramadol) and was sent home with a diagnosis of musculoskeletal pain. He came back

1. OSD, DGHS, Mohakhali, Dhaka-1212, Bangladesh
2. Assistant Registrar, Department of Critical Care Medicine, Dhaka Medical College Hospital, Dhaka-1000, Bangladesh
3. Lecturer, Department of Physiology, Popular Medical College, Dhanmondi, Dhaka-1205, Bangladesh
4. Principal & Professor, Department of Medicine, Popular Medical College, Dhanmondi, Dhaka-1205, Bangladesh

Address of Correspondence: Dr. Sayeef Hossain Khan Mark, OSD, DGHS, Mohakhali, Dhaka-1212, Bangladesh, Email: mark.dmck63@gmail.com

Copyright: © 2023 Association of Physicians of Bangladesh

to emergency department after 3 days as the symptoms persisted with same severity and again was discharged with additional analgesia etoricoxib after a few tests. The initial impression of musculoskeletal pain remained unchanged after the second emergency department presentation. After 4 more days, pain increased in severity to a pain score of 9/10 in comparison to previous presentations which was 7/10 over the next two days and this time, required hospital admission.

On clinical examination, his vitals were normal. The lateral range of movement of his left shoulder was

limited due to the pain. Point tenderness was maximal over the left sternoclavicular joint with soft tissue swelling noted. The other systemic examination was otherwise unremarkable.

Investigations revealed normal hemoglobin, platelet, kidney, electrolyte, liver panel, serum uric acid, and creatine kinase including repeated troponin-T levels and d-dimer. Inflammatory markers were elevated with C-reactive protein 95 mg/L (range 0.2-9.1 mg/L), leucocyte count 10.09 (range 4.0-10 x 10⁹/L), and erythrocyte sedimentation rate 71 mm/h (range 1-10 mm/h). Laboratory findings are shown in Table 1.

Table-I : Laboratory values of investigations performed

| Test | Result | Normal range |
|--------------------------------------|------------------|--------------|
| Hemoglobin (g/dL) | 15.3 (14-18) | 4-10 |
| WBC (x10 ⁹ /L) | 10.9 (4-10) | 40-75 |
| Neutrophil (%) | 85.9 (40-75) | 15-41 |
| Lymphocytes (%) | 8.0 (15-41) | 14-18 |
| MCV (fL) | 88.4 (78-98) | 78-98 |
| Platelet count (x10 ⁹ /L) | 384 (140-440) | 140-440 |
| ESR (mm/h) | 71 (1-10) | 1-10 |
| Albumin (g/L) | 38 (40-51) | 40-51 |
| Urea (mmol/L) | 3.2 (2.7-6.9) | 2.7-6.9 |
| Creatinine (umol/L) | 63 (54-101) | 54-101 |
| Sodium (mmol/L) | 138 (136-146) | 136-146 |
| Potassium (mmol/L) | 4.8 (3.6-5.0) | 3.6-5.0 |
| Chloride (mmol/L) | 102 (100-107) | 100-107 |
| Bicarbonate (mmol/L) | 24.8 (19-29) | 19-29 |
| Total calcium (mmol/L) | 2.26 (2.09-2.46) | 2.09-2.46 |
| Phosphate (mmol/L) | 1.50 (0.94-1.5) | 0.94-1.5 |
| CRP (mg/L) | 95 (0.2-9.1) | 0.2-9.1 |
| D-dimer (microgram/mL FEU) | 0.13 (0.19-0.55) | 0.19-0.55 |
| Troponin (ng/L) | 11 (<30) | <30 |
| Uric acid (umol/L) | 459 (218-578) | 218-578 |
| Creatine kinase (U/L) | 69 (56-336) | 56-336 |
| Bilirubin (umol/L) | 15 (7-32) | 7-32 |
| Alkaline phosphatase (U/L) | 87 (39-99) | 39-99 |
| Alkaline transaminase (U/L) | 19 (6-66) | 6-66 |
| Aspartate transaminase (U/L) | 30 (12-42) | |

Chest X-ray P/A view and X-ray shoulder joint was unremarkable and there was no evidence of fractures or destructive lesions. Electrocardiogram was unremarkable and was in sinus rhythm.

However, an MRI of the sternoclavicular joint was performed to rule out other pathologies as pain was still increasing. There was edema of the left sternocostal joint and also showed edema of his distal left first rib involving the costochondral junction. This was likely due to the close proximity between these locations. There was neither effusion nor significant marrow edema in the sternum (Figures 1-2). There was also enhancing edema in the slightly thickened left pectoralis major muscle and no abscess or fractures were seen. On the basis of the MRI findings, diagnosis of Tietze's syndrome post-COVID-19 infection was made.

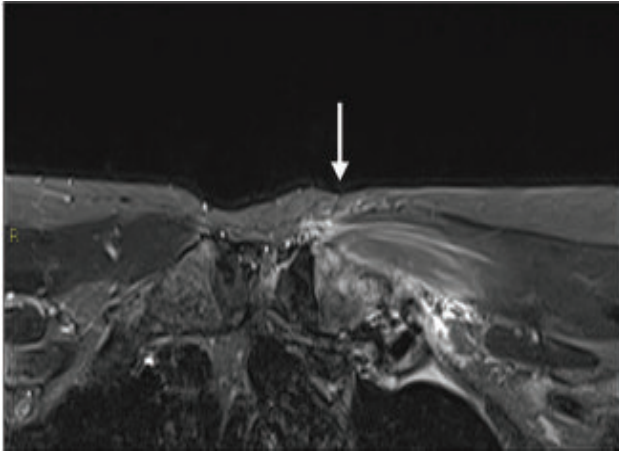


Figure 1: Axial fat suppressed fluid-sensitive MRI shows edema in the left distal first rib and surrounding soft tissue, in keeping with costochondritis. There is also mild signal change in the adjacent medical clavicle head.

The patient was initially started on nonsteroidal anti-inflammatory drugs (NSAIDs) ibuprofen 400 mg three times a day. But he was still complaining pain with same intensity after 3 days. Then, he was started with colchicine 500 mcg three times a day. The patient reported a reduction in pain, as well as an improvement in left shoulder range of movement. He was discharged with both regular doses of colchicine and ibuprofen for another one week and was asked to come for follow-up after two weeks. The patient reported a further improvement in his pain of about 80% after two weeks and ibuprofen was given as needed. There was complete resolution of pain after six weeks in the next follow-up.

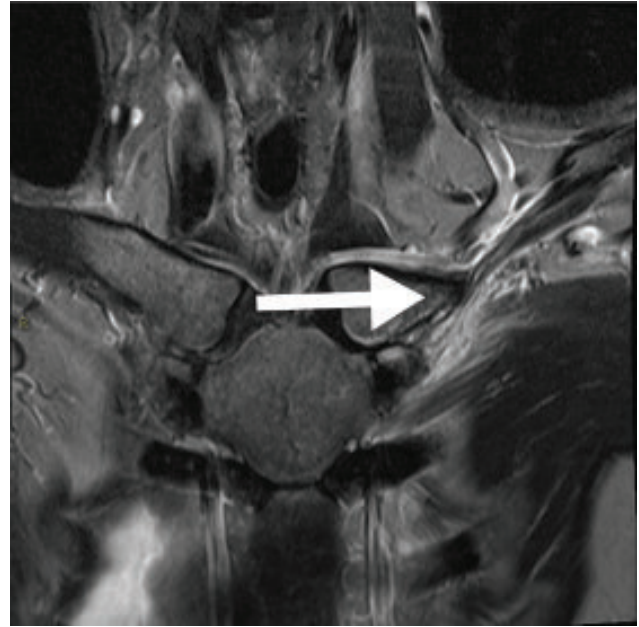


Figure 2: Coronal fat suppressed fluid sensitive MRI shows edema in the left distal first rib and surrounding soft tissue, in keeping with costochondritis. There is also mild signal change in the adjacent medical clavicle head. The overlying pectoralis major muscle is edematous, likely secondary to reactive change.

Discussion:

Tietze's syndrome occurs due to inflammation of the costal cartilage which connects the ribs to the sternum. Patients frequently present with chest pain that is exacerbated with movement and/or positional changes. The pain tends to be exacerbated by movement and can be both dull and sharp in nature. Often, there is tenderness on palpation of the involved sternocostal joints of the chest wall.³ Tietze's syndrome normally affects single joints and is unilateral in 70% of the cases while costochondritis typically affects multiple joints and is bilateral in 90% of cases. Painful swelling of the affected area such as in this case helps to differentiate Tietze's syndrome from costochondritis.⁴

The exact cause is often unknown, although it has been associated with chronic excessive coughing, vomiting, trauma to the chest as well as respiratory infections particularly post viral. The etiology of chest pain determination in COVID-19 is crucial as lethal causes such as acute myocardial infarction and pulmonary embolism need to be excluded before committing to the diagnosis of Tietze's syndrome or costochondritis.⁵ The treatment generally involves the use of anti-inflammatory medications such as

NSAIDs. Heat compression over the affected areas can also help to relieve pain. Colchicine was also successfully administered as an alternative to the standard therapy of NSAIDs to help resolve the pain associated with post-COVID-19 costochondritis.⁶ In our case report, colchicine helped in addition to conventional analgesia such as NSAIDs and tramadol with good outcomes.⁷ Colchicine, a drug traditionally used for gout prophylaxis and treatment, has been used off-label to treat several other conditions such as pericarditis due to its anti-inflammatory properties.⁸ Colchicine's ability to reduce pain and inflammation involves disrupting the cellular cytoskeleton, thereby preventing activation, degranulation, and migration of neutrophils associated with gouty inflammation.⁹ Many suggest that colchicine can be used to help fight COVID-19 due to its anti-inflammatory and antiviral properties and that it could help to spare the morbidity and mortality associated with the disease.¹⁰⁻¹² In the search for drugs that can be repurposed, colchicine has been shown to reduce the risk and severity of cardiovascular events while demonstrating rare risks of myopathies, cytopenia, and transaminitis.¹³ Although rarely needed, local administration of combined lidocaine/corticosteroid into costochondral areas can also be done in refractory cases in costochondritis and Tietze's syndrome. Physiotherapy is crucial in improving symptoms and function caused by costochondritis.⁸

Previously, there has been case reports of post-COVID-19 costochondritis was reported adults who was immunosuppressed.¹⁴⁻¹⁵ To our best knowledge, this is a first case of post COVID-19 Tietze's syndrome who was immunocompetent with no past medical history.

We recommend considering post-COVID-19 Tietze's syndrome and costochondritis as differential diagnoses, especially if other causes have been ruled out in an individual with a recent COVID-19 infection. Early diagnosis and appropriate treatment can prevent repeated emergency department visits and improve patient care.

Conclusion:

This case report demonstrates a case of Tietze's syndrome in a patient post-COVID-19 infection. The diagnoses of Tietze's syndrome and costochondritis post-COVID-19 infection should be considered, after ruling out other sinister causes of chest pain. With increased awareness of post-COVID-19 complications, non-life-threatening conditions such as these may have a great impact on a patient's

quality of life. With appropriate diagnosis and prompt targeted treatment, repeated ED visits can be prevented with improved patient experience and reduced financial costs.

Conflict of Interest:

The authors stated that there is no conflict of interest in this study

Funding:

This research received no external funding.

Consent:

For the purpose of publishing this case report and any related photos, the patient are written informed consent was acquired.

References:

1. Hanak JA: Chapter 117 - Tietze syndrome. *Essentials of Physical Medicine and Rehabilitation (Fourth Edition)*. Frontera WR, Silver JK, Rizzo TD (ed): Elsevier, Philadelphia; 2020. 640-645. <https://doi.org/10.1016/B978-0-323-54947-9.00117-6>
2. Say D, Crawford N, McNab S, Wurzel D, Steer A, Tosif S: Post-acute COVID-19 outcomes in children with mild and asymptomatic disease. *Lancet Child Adolesc Health*. 2021, 5:e22-e23. [https://doi.org/10.1016/S2352-4642\(21\)00124-3](https://doi.org/10.1016/S2352-4642(21)00124-3) PMID:33891880
3. Schumann JA, Sood T, Parente JJ: *Costochondritis*. StatPearls Publishing, Treasure Island, FL; 2022.
4. Proulx AM, Zryd TW: Costochondritis: diagnosis and treatment. *Am Fam Physician*. 2009, 80:617-620.
5. Weng LM, Su X, Wang XQ: Pain symptoms in patients with coronavirus disease (COVID-19): a literature review. *J Pain Res*. 2021, 14:147-159. <https://doi.org/10.2147/JPR.S269206> PMID:33531833 PMCID:PMC7847371
6. Collins RA, Ray N, Ratheal K, Colon A: Severe post-COVID-19 costochondritis in children. *Proc (Bayl Univ Med Cent)*. 2022, 35:56-57. <https://doi.org/10.1080/08998280.2021.1973274> PMID:34966216 PMCID:PMC8477585
7. Reyes AZ, Hu KA, Teperman J, Wampler Muskardin TL, Tardif JC, Shah B, Pillinger MH: Anti-inflammatory therapy for COVID-19 infection: the case for colchicine. *Ann Rheum Dis*. 2021, 80:550-557. <https://doi.org/10.1136/annrheumdis-2020-219174> PMID:33293273 PMCID:PMC8491433
8. Zaruba RA, Wilson E: Impairment based examination and treatment of costochondritis: a case series. *Int J Sports Phys Ther*. 2017, 12:458-467.
9. Sadiq NM, Robinson KJ, Terrell JM. Colchicine. In: *StatPearls*. Treasure Island, FL: Stat Pearls; 2021.

10. Schlesinger N, Firestein BL, Brunetti L.. Colchicine in COVID-19: an old drug, new use. *CurrPharmacol Rep.* 2020;1-9. <https://doi.org/10.1007/s40495-020-00225-6> PMID:32837853 PMCid:PMC7367785
11. Vitiello A, Ferrara F.. Colchicine and SARS-CoV-2: management of the hyperinflammatory state. *Respir Med.* 2021; 178:106322. <https://doi.org/10.1016/j.rmed.2021.106322> PMID:33550151 PMCid:PMC7848559
12. Reyes AZ, Hu KA, Teperman J, et al.. Anti-inflammatory therapy for COVID-19 infection: the case for colchicine. *Ann Rheum Dis.* 2021; 80:550-557. <https://doi.org/10.1136/annrheumdis-2020-219174> PMID:33293273 PMCid:PMC8491433
13. Misra DP, Gasparyan AY, Zimba O. Benefits and adverse effects of hydroxychloroquine, methotrexate and colchicine: searching for repurposable drug candidates. *Rheumatol Int.* 2020;40:1741-1751. <https://doi.org/10.1007/s00296-020-04694-2> PMID:32880032 PMCid:PMC7467139
14. Ergenç Ý, PanalToprak C, Odabaşý Z: Staphylococcus aureus costochondritis and chest wall abscess in a COVID-19 patient treated with tocilizumab. *Turk J Phys Med Rehabil.* 2021, 67:382-385. <https://doi.org/10.5606/tftrd.2021.8208> PMID:34870129 PMCid:PMC 8607000
15. Gorospe-Sarasúa L, Gallego-Rivera JI, Muñoz-Molina GM, Mirambeaux-Villalona RM, Ajuria-Illarramendi O, González-García A, Barbolla-Díaz I: [Delayed Candida Costochondritis and Spondylitis in a Post-COVID-19 Patient Previously Treated With Corticosteroids, Antibiotics, and Tocilizumab]. *Arch Bronconeumol.* 2021, 57:48-50. <https://doi.org/10.1016/j.arbres.2020.12.002> PMID:34629649 PMCid: PMC7832559