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CASE REPORT

Incidental detection of Tietze syndrome with costochondritis: A case report

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ABSTRACT

Background: Tietze syndrome represents a rare and atypical source of anterior chest discomfort, distinguished by localized tenderness and non-suppurative swelling, typically centered around the 2nd or 3rd costal cartilages. Despite diligent investigation, the precise underlying causes of Tietze syndrome remain elusive.

Case Report: We present a case of a 35 year old male patient with suspected Tietze syndrome with costochondritis. He came in with complaints of abdominal pain and frequent coughs. He has a history of ADPKD and thalassemia since age 12. Tietze syndrome was an incidental finding in this patient. A thorax scan showed multiple nodular and lobulated lesions in the medial mediastinum; additionally, an abnormal widening and flattening of the costochondral junction of the ribs bilaterally. The CT scan findings reveal notable deformities characterized by widened and irregularly shaped anterior rib masses spanning the 1st to the 4th ribs bilaterally. The USG scan of the thorax showed a hypogenic thickening of the costochondral junction with vascularization.

Discussion: Tietze's syndrome presents a diagnostic challenge necessitating comprehensive imaging modalities for accurate diagnosis. Ultrasound imaging stands out as the primary approach, showcasing conspicuous soft tissue swelling indicative of the ongoing inflammatory process. While computed tomography often reveals subtle focal swellings or mild sclerosis in the affected joint.

Conclusion: The clinical manifestations frequently encompass an abrupt onset of chest discomfort devoid of antecedent trauma, predominantly observed among younger cohorts with an otherwise clean bill of health. Ultrasound is an accurate and effective modality to diagnose Tietze syndrome. This disease is frequently associated with other comorbidities such as rheumetic and autoimmune disorders.

Keywords: Tietze, costochondritis, case report

INTRODUCTION

Tietze syndrome represents a rare and atypical source of anterior chest discomfort, distinguished by localized tenderness and non-suppurative swelling, typically centered around the 2nd or 3rd costal cartilages. Despite diligent investigation, the precise underlying causes of Tietze syndrome remain elusive.[1] An association with certain underlying conditions such as psoriatic arthritis has been proposed, alongside incidents like falls, vehicular accidents, and respiratory ailments such as sinusitis or laryngitis, which may contribute to its development.[2] However, the exact prevalence and incidence rates of Tietze syndrome remain undetermined, with no discernible correlations observed with biological sex, ethnicity, geography, or occupational factors.[3,4]

Notably, Tietze syndrome exhibits a near equal distribution between males and females, with a predilection for individuals under 40 years of age, although instances among older demographics have been reported albeit less frequently.[2] Clinical presentations typically entail acute chest pain devoid of preceding trauma, particularly prevalent in younger, otherwise healthy individuals.[5] Physical examination commonly reveals sharp, stabbing pain localized directly over the swollen area, with potential radiation to the shoulder and proximal arm regions.[1] Additionally, practitioners may occasionally detect a palpable, firm, spindle-shaped swelling overlaying the affected rib cartilage. The severity of localized pain can vary from mild to

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severe, with a propensity for affecting upper ribs, notably T1 through T4, with the 2nd and 3rd ribs being the most frequently involved levels.[1]

CASE REPORT

We present a case of a 35 year-old male patient with suspected Tietze syndrome with costochondritis. He came in with complaints of abdominal pain and frequent coughs with the initial diagnosis being a respiratory infection. He has a history of ADPKD and thalassemia since age 12. Tietze syndrome was an incidental finding in the patient.

The patient underwent a Chest X-ray scan which showed which showed multiple nodular and lobulated lesions in the medial mediastinum and a widening and flattening of the costochondral junction of the ribs bilaterally. This was indicative of rounded pneumonia or mass with lymphoma or lymphadenopathy in the chest; as well as costochondritis in the I-IV ribs or Tietze syndrome (Figure 1). The patient then underwent CT scan of the thorax.

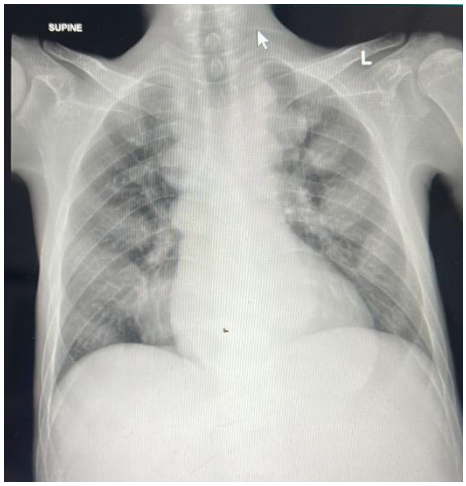

Figure 1. A thorax photo of the patient which showed multiple nodular and lobulated lesions in the medial mediastinum and a widening and flattening of the costochondral junction of the ribs bilaterally

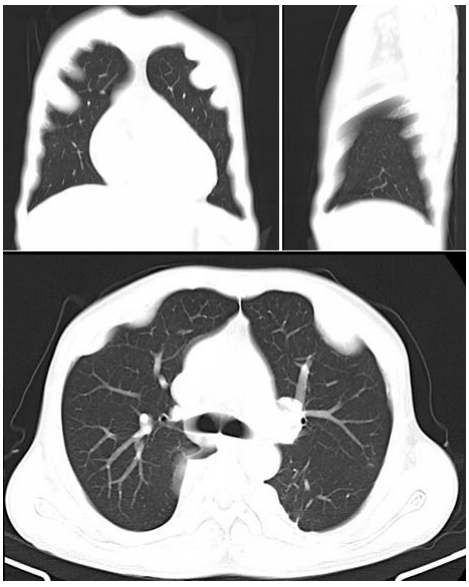

Figure 3. A contrast CT scan of the chest which showed deformity, widening and irregular shape, of the 1-4th anterior rib mass (contrast Hounsfield unit of 250); in addition a hypodense mass (pre-contrast Hounsfield unit of 50) was shown near the costochondral junction.

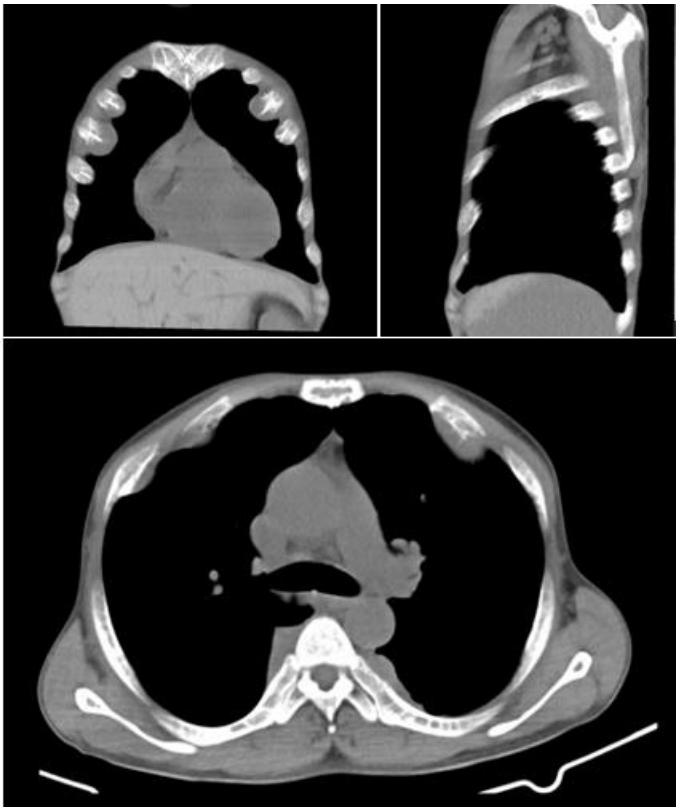

Figure 2. A non-contrast CT scan of the chest which showed deformity, widening and irregular shape, of the 1-4th anterior rib mass (pre-contrast Hounsfield unit of 187); in addition a hypodense mass (pre-contrast Hounsfield unit of 25) was shown near the costochondral junction.

The CT scan findings reveal notable deformities characterized by widened and irregularly shaped anterior rib masses spanning the 1st to the 4th ribs bilaterally. These observations are further underscored by distinct pre-contrast Hounsfield units measuring 187 and 250 post-contrast administration, indicative of significant anatomical abnormalities.

Additionally, a hypodense mass adjacent to the costochondral junction is discernible, distinguished by pre-contrast Hounsfield units of 25, escalating to 50 post-contrast administration (Figure 2 & 3). Furthermore, a lobulated cystic mass with well defined borders on the wall of the posterior hemithorax (level of T7-10 vertebrae) was

found in the patient with minimal enhancement (Pre-contrast HU of 16-23 and post contrast of 18-35). This was indicative of lobulated pleural effusion. Ground glass opacities in the medial-basal and posterobasal segment bilaterally was also found indicating Hypersensitivity pneumonitis. On palpation of the effected area, the patient showed moderate discomfort and described a sharp pain.

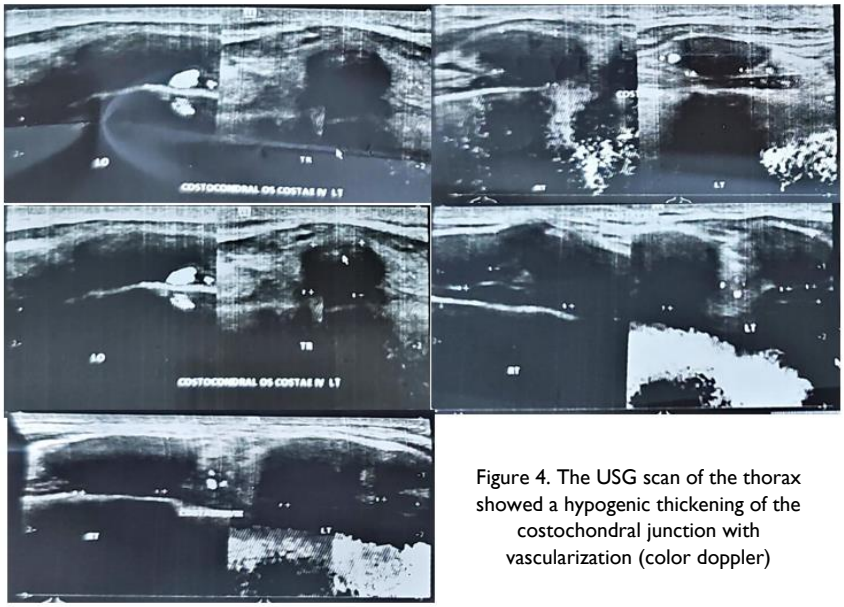

Figure 4. The USG scan of the thorax showed a hypogenic thickening of the costochondral junction with vascularization (color doppler)

DISCUSSION

Tietze's syndrome, though relatively uncommon, presents a diagnostic challenge necessitating comprehensive imaging modalities for accurate diagnosis. This patient has a history of ADPKD and thalassemia which has no clear relationship with Tietze syndrome. Among the most frequently utilized methods, ultrasound imaging stands out as the primary approach, showcasing conspicuous soft tissue swelling indicative of the ongoing inflammatory process. Conversely, nuclear magnetic resonance (NMR) imaging offers unparalleled precision in delineating inflammatory changes within the adjacent adipose tissue and bone marrow, resulting in compression and intimate adhesion of the articular surfaces, without evidence of destructive alterations in cartilage and bone integrity.[1,6]

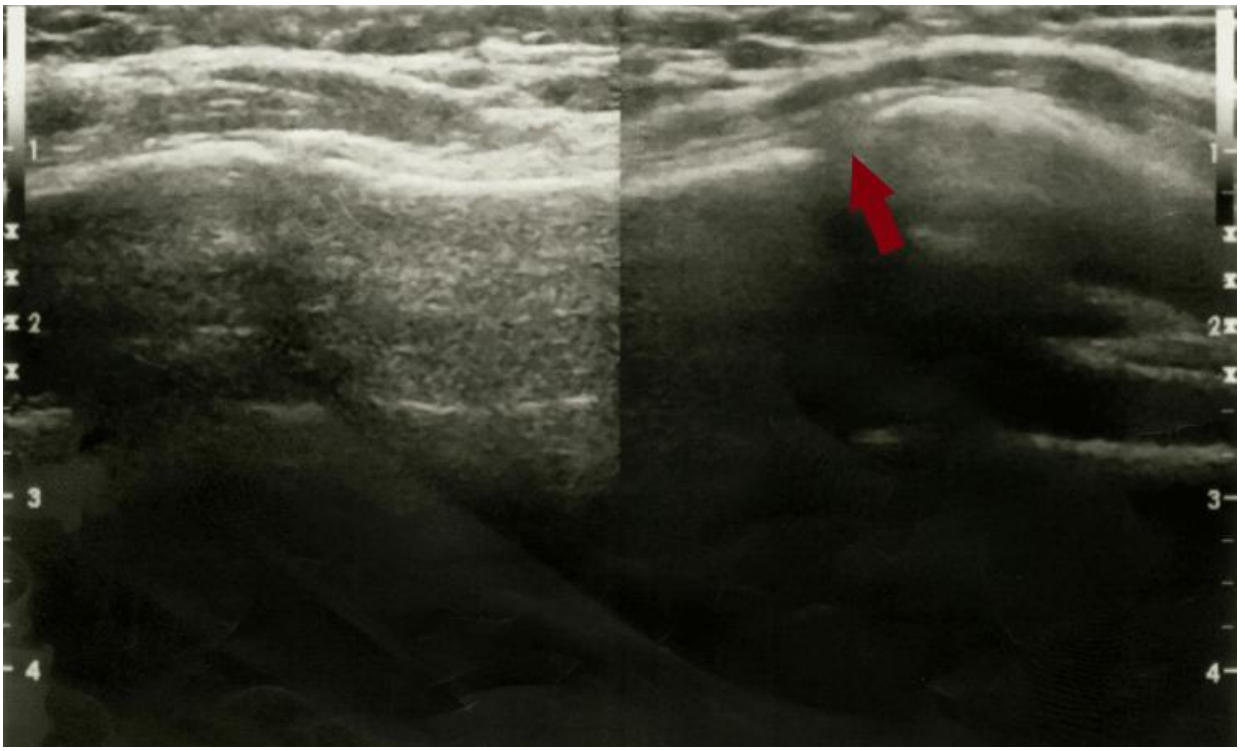

Figure 5. Ultrasound scan image of the sternocostal joints which showed an oval-shaped hypoechoic focus characteristic of Tietze syndrome[5]

While conventional radiography yields standard interpretations, computed tomography often reveals subtle focal swellings or mild sclerosis in the affected joint. Notably, recent case reports underscore the efficacy of positron emission tomography, particularly when coupled with a computed tomography-

fluorodeoxyglucose tracer, in visualizing hypermetabolic activity and dense calcification at the symptomatic joint. Histopathological examination of costal cartilage reveals distinctive vascular proliferation and peripheral cartilage hypertrophy, underscoring ongoing proliferative processes. Concurrently, the perichondrium appears unaffected, while mucopolysaccharide-containing clefts may undergo calcification, further elucidating the pathological landscape.[1,5,7]

One report showed a patient aged 38 years old male came with chest pain and with Covid-19, after further testing he showed no abnormalities therefore underwent a ultrasonography scan of his chest. The tests showed "an oval-shaped hypoechoic focus measuring 16mm/8mm/7mm was discovered at the 4th manubriosternal joint, distorting the joint contour; Color Flow Doppler imaging revealed no vascularization in the affected joint region" (Figure 5). Similarly another report showed 41 year old male patient experiencing chest pain without history of trauma. The chest computed tomography (CT) examination revealed a discernible instance of localized augmentation within the confines of the right second chondrosternal junction, notably absent of any discernible fracture (Figure 6).[2,5]

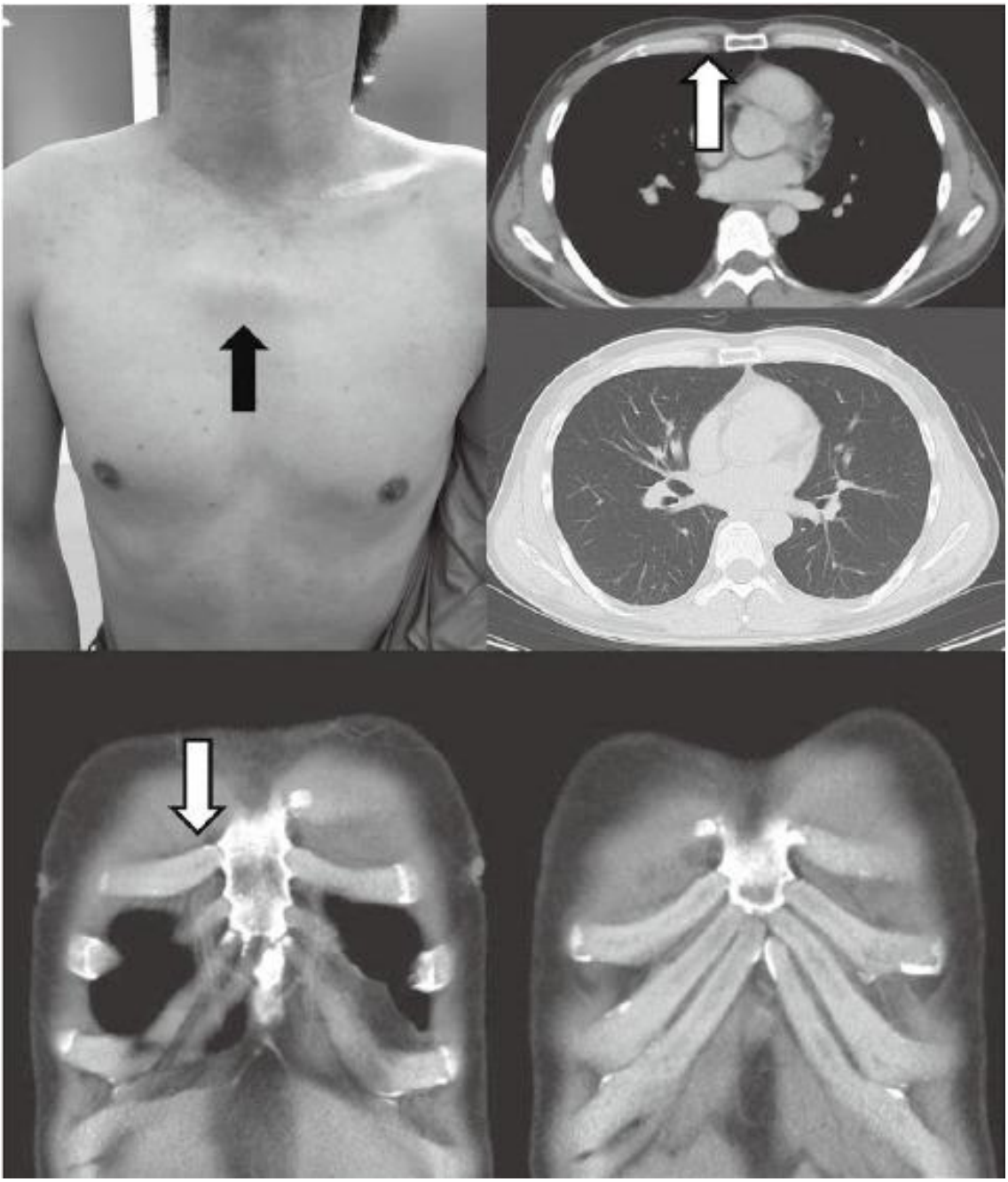

Figure 6. The patient had swelling of the second chondrosternal joints and tenderness on palpation (black arrow, left upper panel). Chest computed tomography (CT) showed minimal focal enlargement of the right second chondrosternal joint without fracture (white arrow).[2]

Central to the management of Tietze syndrome is conservative therapy coupled with patient reassurance regarding its self-limiting nature, often resolving without lasting sequelae, albeit over an extended period. Initial intervention typically involves rest and administration of oral or topical anti-inflammatory and analgesic agents.[8,9] Given the inflammatory etiology, nonsteroidal medications are typically favored over acetaminophen or opioids, with scheduled administration for up to 10 days at anti-inflammatory doses, barring contraindications. Alternatively, a brief course of oral steroids, such as prednisone or methylprednisolone, may be considered in select cases. In instances where conservative measures fall short of adequate relief, targeted injections of local anesthetics, steroids, or their combination at the site of maximal swelling, guided by sonographic visualization, may provide symptomatic amelioration.[1,4] Additional adjunct therapies, including localized warmth applications, have been reported beneficial by certain patients. In refractory cases, surgical resection of cartilage may be contemplated.

Despite advancements in therapeutic approaches, the prevention of Tietze syndrome remains elusive, owing to incomplete understanding of its etiological underpinnings. Nonetheless, most patients experience complete symptom resolution within weeks to months with conservative management, although rare instances of prolonged symptoms persisting for up to a year have been documented, highlighting the need for vigilant follow-up and monitoring for recurrences.

CONCLUSION

We present a case of a 35 year old male patient with suspected Tietze syndrome with costochondritis. He came in with complaints of abdominal pain. Tietze syndrome was an incidental finding the CT scan and ultrasound sonography of the patient. The clinical manifestations frequently encompass an abrupt onset of chest discomfort devoid of antecedent trauma, predominantly observed among younger cohorts with an otherwise clean bill of health. The pain is characteristically delineated as a persistent, dull sensation during periods of rest, metamorphosing into a sharper and more pronounced discomfort upon movement or alterations in posture. Accompanying this sensation is a notable radiation pattern extending towards the cervical region, upper extremities, and shoulders, indicative of the intricate interplay of physiological processes underlying the condition.

Among the pantheon of diagnostic modalities, ultrasound imaging emerges as a preeminent methodology, heralded for its efficacy in revealing pronounced soft tissue edema, hallmarking the ongoing inflammatory cascade which helped in the diagnosis of Tietze syndrome. An incidental finding of Tietze syndrome, while initially potentially anxiety-provoking, ultimately serves as a valuable diagnostic clarity. By providing a benign explanation for chest discomfort and ruling out more severe conditions, it significantly contributes to patient reassurance and can alleviate psychological distress. This understanding enables patients to effectively manage their symptoms through conservative measures and adapt their lifestyle, thereby improving their overall quality of life despite the initial surprise of the diagnosis.

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