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Post-traumatic Tietze syndrome as an occupational accident: A case report study

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ABSTRACT

Tietze syndrome is an inflammatory arthropathy of costochondral junction characterized by chest pain, tenderness and swelling.

We reported the case of a 35-year-old worker with post traumatic Tietze syndrome. He had a history of two occupational chest traumas. They both occurred in the third left costo-chondral joint. Chest computed tomography showed located osteolysis. Differential diagnoses were excluded. He was treated with non-steroidal anti-inflammatory drugs and analgesics. As for partial permanent disability, we suggested 17% given the importance of the pain and its impact on mobility.

Tietze syndrome diagnosis was based on eliminating differential diagnoses. This study raises knowledge about post-traumatic etiology in Tietze syndrome. A better understanding of this pathology could help practitioners with patients facing chest wall pain.

Background

Tietze syndrome, first described in 1929 [1], is an inflammatory arthropathy of costochondral junction [2]. It is a benign condition characterized by chest pain, tenderness and swelling. The diagnosis is mainly clinical with an imaging study. It is a rare condition, and its incidence is quite unknown. It is crucial to exclude other differential diagnoses, especially life-threatening emergencies, to ensure accurate diagnosis. In this report, we presented the case of Tietze syndrome due to an occupational accident. The aims were to highlight the post-traumatic etiology of Tietze syndrome as an occupational accident and to address the legal issues of this workplace injury.

Case presentation

A 35-year-old male, an employee at a limestone company, presented to our institute with complaints of chronic chest wall pain. He had a history of two occupational accidents. The first accident was a chest contusion by a metal bar. He was diagnosed with a

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dislocation of the third left costochondral joint for which he had a work leave of 55 days. The second accident was a blunt chest injury by the forklift truck's forks, occurring in the same anatomical site as the first accident. This incident resulted in severe chest pain. He presented to the emergency room. On examination, he had only erythema. A comprehensive assessment including clinical examination, blood tests, chest X-Rays, and an electrocardiogram, was performed. There were no abnormalities, which permitted ruling out life-threatening emergencies. He had a work leave of 15 days followed by another leave of 35 days.

One year after the second accident, the patient was referred to our institution to establish a causal link between sequelae and the accident and in order to assess the degree of permanent medical impairment disability. He presented with parietal sternal pain exacerbated by deep breathing and left upper limb mobility, restraining his professional and daily activities.

He had swelling of the second left sternoclavicular joint with sharp pain on pressure without signs of local inflammation (photo a, b). Active and passive mobility was not limited but revived the chest pain. He also had pain upon pressure at the xiphoidal process and asymmetrical shoulder blades.

Chest CT showed thickening of the synovium with the presence of air in of the sternoclavicular joint space and hypertrophy with hypodense appearance of the cartilages of the first, second and third left costo-sternal joints and retrosternal tissue edema with no detectable collection without signs suggestive of a rheumatic condition (photos c,d,e,f). Tietze syndrome was diagnosed, based on these clinical and radiological findings.

Subsequently, the patient was then referred to a rheumatology specialist who suggested the usage of non-steroidal anti-inflammatory drugs, analgesics, and local corticosteroid injection. After the treatment, the pain partially subsided; however, the patient continued to experience paroxysms triggered mainly by physical exertion at work. These sudden and intense outbursts were self-treated by analgesics such as paracetamol and tramadol. The patient was followed up for two months by the referred rheumatology specialist, since, he has not re-consulted.

As for partial permanent disability, we suggested 17% referring to the Tunisian indicative scale given the importance of the pain and its impact on mobility.

Discussion

Tietze's syndrome has been characterized as a tender, non-suppurative swelling commonly without rubor or erythema in the upper costosternal joint and less commonly in the xiphisternal joint [3]. While the etiology and pathology of the disease are still unclear [4], some commonly described causes include chronic coughing or sneezing, infections, immunological disorders and vitamin deficiencies [5,6]. However, post-traumatic etiology was poorly described in the literature. It is commonly believed to be secondary to micro-traumatism. [7]

Symptoms are not characteristic; and may involve pain within the front chest wall which radiates to the shoulder and arm. The pain is exacerbated by deep breathing, sneezing and movements of the torso and ipsilateral arm. [7]

Diagnosis is based on basic clinical trials aiming to exclude other diseases, in particular life-threatening emergencies including coronary syndromes, pulmonary embolism, inflammatory changes in the lungs and pleura [8] and costal cartilage inflammation (costochondritis). The latter, also defined as a sternocostal syndrome, chondrodynia or front chest wall syndrome is often confused with Tietze's syndrome [7]. Laboratory work is usually normal by may show elevated inflammatory markers [2]. Radiographs are

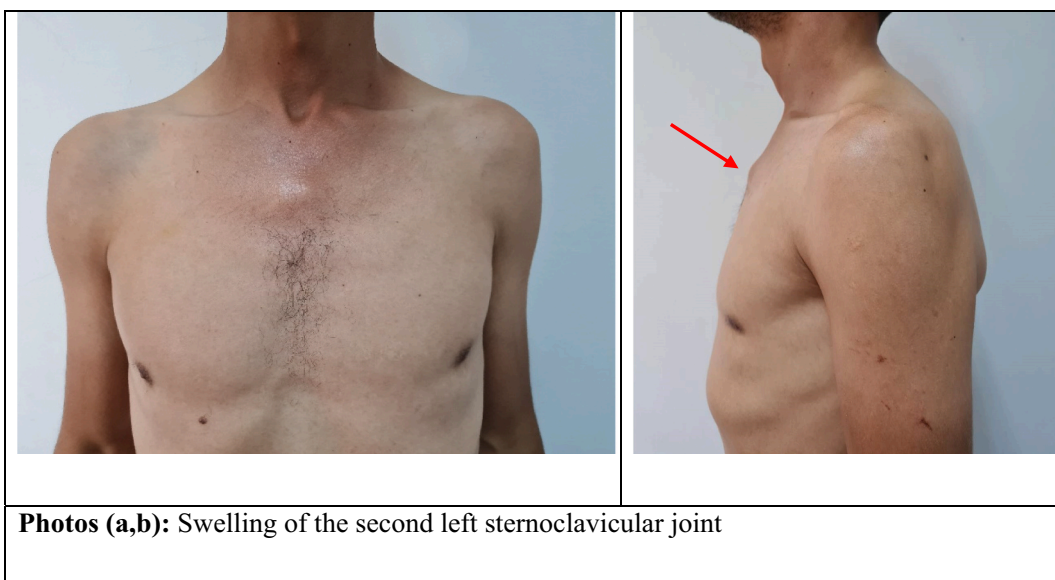
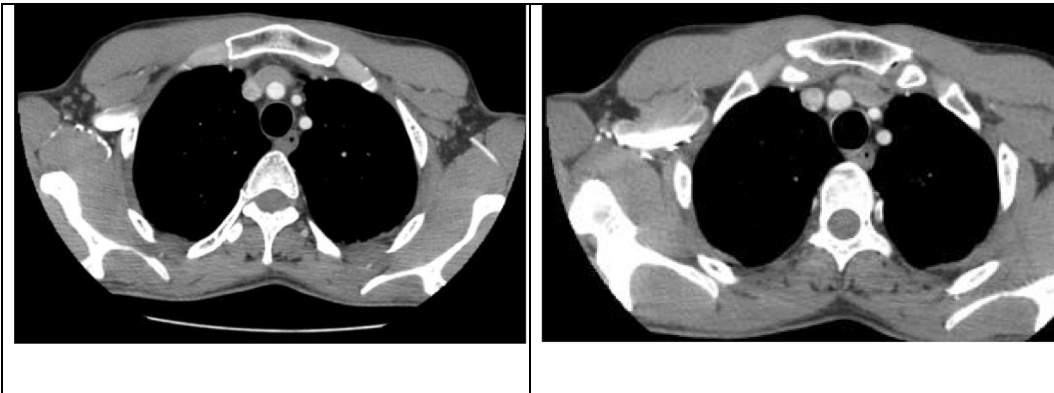


Photo a, b. Swelling of the second left sternoclavicular joint.

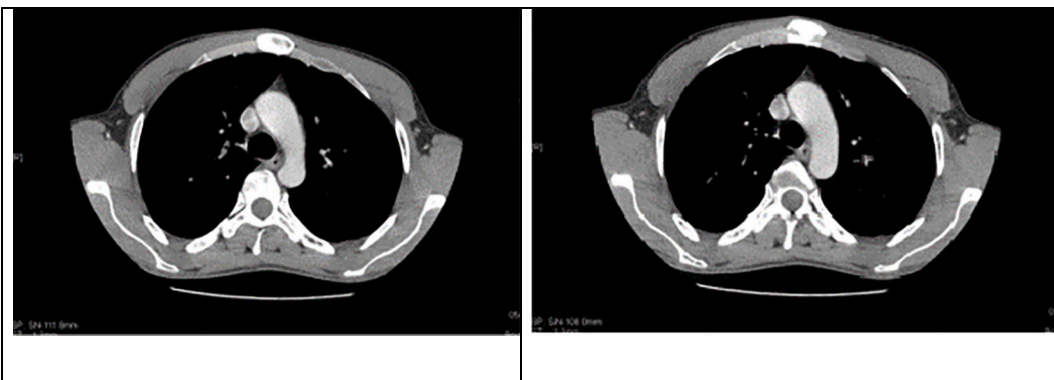


Photos c and d: Osteoarthritis of the sternoclavicular joint

- Thickening of the synovium with the presence of air in the joint space
- Condensation with hypertrophy of the articular sternal and clavicular edges

Photo c, d. Osteoarthritis of the sternoclavicular joint

- Thickening of the synovium with the presence of air in the joint space
- Condensation with hypertrophy of the articular sternal and clavicular edges.



Photos e and f : Hypertrophy with hypodense appearance of the cartilages of the first, second and third left costo-sternal joints.

Photo e, f. Hypertrophy with hypodense appearance of the cartilages of the first, second and third left costo-sternal joints.

typically read as normal, CT could also be read as normal but may show a slight focal swelling or mild sclerosing of the symptomatic joint [9,10]. In the differential diagnosis between Costochondritis and Tietze syndrome, several arguments have been considered. They were mainly the young age of the patient, the presence of local swelling along with no signs of inflammation. The presence of one single, unilateral lesion in the second and third costochondral junction with no conclusive imaging is also more frequently associated with Tietze syndrome [7]. In our case, a post-traumatic Tietze syndrome etiology was retained, in view of temporality (both accidents occurring prior to the complaint), of the anatomic site being the same as cited in initial medical certificates for both occupational accidents and the absence of arguments for differential diagnosis for chest wall pain [11].

Treatment is mainly based on pain control using nonsteroidal anti-inflammatory drugs, and application of local heat. Corticosteroid and lidocaine injections to the cartilage or intercostal nerve block are considered for refractory patients [12].

Partial permanent disability (PPD) refers to the impairment of a body system such as impaired mobility, deformity or chronic pain. It is presented as the lack of ability to perform either in the natural environment whether it is home, social environment or work [13]. It is assessed when an injured worker has reached a healing plateau. In Tunisia, it is calculated according to the Tunisian indicative scale

for permanent disabilities resulting from occupational accidents and work-related illnesses and it is expressed as a rate going from 0 to 100%. When exceeding 67% the worker is said unfit for work [14]. Since this patient's case was unprecedented, the PPD was assessed taking into consideration several factors. These factors were the nature of the impairment, overall health, age, physical and mental faculties of the victim, as well as their skills and professional qualifications. In the referring Tunisian indicative scale injuries affecting the thoracic wall result in disability rates ranging from 5% to 15% [14]. For our case, PPD has been increased to 17% considering the severity of pain and the functional impairment caused by the condition. The Tunisian scale being mainly indicative, as it is mentioned in the latter, "the proposed disability rates are average rates, and the evaluating physician retains complete freedom to deviate from the scale's rates when faced with specific cases. In such instances, the physician is obligated to provide the reasons that led to the deviation" [14].

Conclusions

Chest wall pain can be a source of great morbidity and anxiety for patients. This study raises knowledge about Tietze syndrome and post-traumatic etiology. These conditions were rarely described in literature. Diagnosis was based on eliminating differential diagnoses. Treatment was based on anti-inflammatory drugs. Some cases may be refractory to treatments. A better understanding of this pathology could help practitioners angle their effort on pain relief rather than endless and needless explorations for other conditions.

Abbreviation

CT computed tomography

Ethics approval and consent to participate

Not applicable.

Consent for publication

Written consent was obtained from the patient.

CRedit authorship contribution statement

Asma Kouba: drafting the work and interpretation of data.

Nesrine Kammoun: drafting the work and interpretation of data.

Nada Kotti: revising the work.

Yosr Hentati: interpretation of the data.

Rawdha Tekaya: revising the work.

Mejda Bani: final approval of the version to be published.

Habib Nouaigui: agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Declaration of competing interest

The authors declare that they have no competing interests.

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