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Review
Derleme

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Tietze syndrome

Tietze sendromu

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Abstract
Tietze syndrome, first described in 1921 by Prof. Alexander TIETZE, is characterized with tender nonsuppurative swelling, pain, and tissue edema in the second or third costosternal cartilage. Differential diagnosis of Tietze syndrome includes diverse diseases, and its diagnosis relies on clinical examination, not the use of additional diagnostic techniques. The treatment of Tietze syndrome includes the use of anti-inflammatory medication and implementation of lifestyle modifications during the attacks. Surgical treatment is reserved for refractory cases and often is not necessary. Tietze syndrome can easily be diagnosed and treated in primary care medicine practice due to its benign nature.
Keywords: Tietze syndrome, Differential diagnosis, Treatment, Lifestyle modifications

Öz
Tietze sendromu ilk olarak 1921 yılında Prof. Alexander TIETZE tarafından tanımlanmıştır. Tietze sendromu ikinci veya üçüncü kostosternal kartilajda süpüratif olmayan, şişlik, hassasiyet, ağrı ve doku ödemi olarak tanımlanır. Tietze sendromunun ayırıcı tanısı birçok farklı hastalığı kapsamaktadır. Tietze sendromu tanısı esas olarak kliniktir olup genellikle ek tanı yöntemlerinin kullanılmasını zorunlu kılmaz. Tietze sendromunun tedavisi ataklar sırasında anti-inflamatuar ilaç kullanımı ve yaşam tarzı değişikliklerin uygulanması içerir. Cerrahi tedavi refrakter olgular için uygulanabilmekle birlikte genellikle gerekli değildir. Tietze sendromu iyi huylu yapısı nedeniyle birinci basamak hekimlik uygulamalarında kolayca teşhis ve tedavi edilebilir.
Anahtar kelimeler: Tietze sendromu, Ayırıcı tanı, Tedavi, Yaşam tarzı değişiklikleri

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Introduction

Tietze syndrome (TS), first described in 1921 by Prof. Alexander TIETZE [1], is characterized with tender nonsuppurative swelling, tenderness, pain, and tissue edema in the second or third costosternal cartilage (Figure 1). TS is one of the musculoskeletal causes of chest wall pain. In primary care, about 35% of all patients who are admitted with chest pain are diagnosed with musculoskeletal pain [2].

Etiology and epidemiology

The exact epidemiology of the TS is obscure. It is a rare cause of chest wall pain and is known to affect people under the age 40, mainly during the second and third decades [3]. Male to female ratio is thought to be equal but the exact incidence and prevalence of this entity remains unknown. TS occurs equally on right and left sides of thorax [4]. TS's exact etiology is unknown. Tuberculosis is blamed as an etiological factor but has never been proven [1,3].

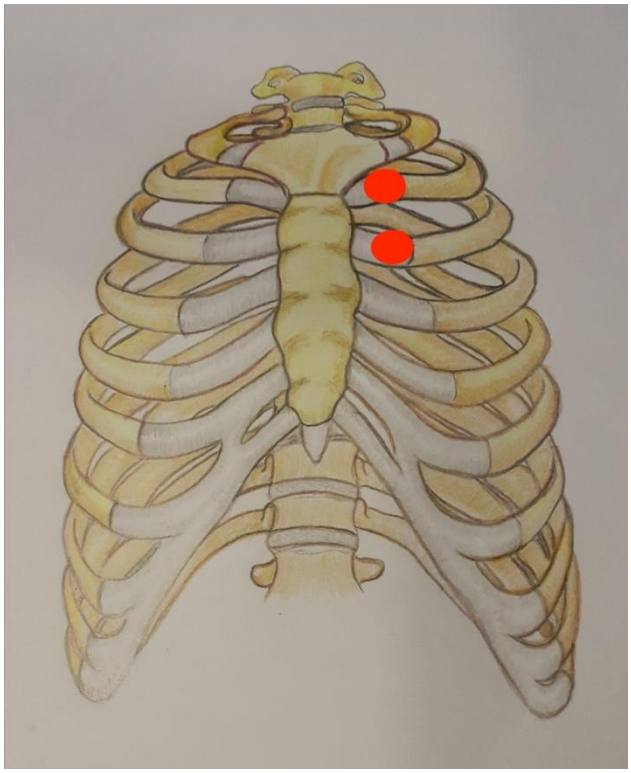

Figure 1: Demonstration of common sites of Tietze syndrome

Differential diagnosis

Differential diagnosis of TS includes costochondritis, other musculoskeletal pain syndromes, cartilage tumors (chondroma, chondrosarcoma), primary spontaneous pneumothorax and acute myocardial infarction. The comparison between TS and these diseases are described in Table 1 [3,5-10]. Other diseases in the differential diagnosis of TS are fibromyalgia (FM), gastro-esophageal reflux disease (GERD), chest wall infections and abscesses. Fibromyalgia (FM) is a common chronic musculoskeletal pain syndrome, characterized by diffuse musculoskeletal pain with a widespread soft tissue tenderness on physical examination, fatigue and sleep disturbance [11]. It is the most common disease in the differential diagnosis of TS. 2-8% of the general population is considered to have FM [12,13]. It is a benign condition which can cause anterior chest pain, and lead to misdiagnosis [13]. Pain caused by GERD is dull and aching-type, with acid reflux to mouth which cannot be aggravated with palpation and movement [14]. Chest wall infections and abscesses can also cause chest pain with swelling on the affected site, a superficial infection with erythema, or a draining sinus [15,16].

Table 1: Comparison of the major characteristics of the Tietze Syndrome, Costochondritis, Cartilage Tumors, Primary Spontaneous Pneumothorax and Acute Myocardial Infraction

	Tietze Syndrome	Costochondritis	Cartilage Tumors	Primary Spontaneous Pneumothorax	Acute Myocardial Infarction
Age of onset	Common under 40	All ages	Common over 40	Common in second and third decades	Common over 40
Prevalence	Uncommon	Common	Uncommon	Relatively Common	Common
Pain nature	Aching, dull or sharp. Sometimes pleuritic. Aggravated with palpation and movement	Sharp aching	Sharp	Sharp and pleuritic	Aching, dull. Cannot be aggravated with palpation and movement
Pain onset	Recent onset with physical activity	Pain onset with repetitive physical activity	Usually chronic	Sudden	Recent onset or sudden
Symptoms	Painful swelling on the chest, sometimes erythema	Chest pain without swelling on the chest	Chest pain, usually swelling on the affected site	Sharp chest pain, dyspnea	Aching dull chest pain (angina pectoris), palpitation
Signs	Tenderness and edema of the 2nd or 3rd costosternal cartilage	Tenderness on palpation without edema on 4th, 5th and 6th costosternal cartilages	Tenderness on palpation, MRI findings specific to cartilage tumors	Sharp pleuritic pain with sudden onset, diminished lung auscultation sounds, tachypnea and dyspnea are usually present	Angina pectoris, Q wave presence, inverted T wave presence, bundle branch block on ECG, myocardial movement abnormalities in echocardiography
Diagnosis	Physical examination is usually enough, thoracic CT if infection is suspected	Physical examination, USG, MRI, bone scintigraphy	Physical examination, PA chest x-ray, CT, USG, MRI, bone scintigraphy, PET/CT	Physical examination, chest x-ray is usually enough, USG and thoracic CT are seldom necessary	Physical examination, ECG, Echocardiography, PTCA
Treatment	Analgesic treatment with NSAID, local corticosteroid injections in relapsing cases	Analgesic treatment with NSAID, local lidocaine and corticosteroid injections in relapsing cases	Resection	Chest tube thoracostomy, oxygen inhalation and analgesic treatment with NSAID	Antiaggregants, PTCA, CABG

PA: posterior-anterior, CT: computer tomography, USG: Ultrasonography, MRI: magnetic resonance imaging, NSAID: non-steroid anti-inflammatory drugs, PTCA: Percutaneous transluminal coronary angioplasty, CABG: Coronary artery bypass graft, PET/CT: positron emission tomography/computer tomography, ECG: electrocardiography

Diagnosis

For the diagnosis of TS, an accurate medical history-taking and physical examination is usually enough. Patients express a painful swelling on the anterior chest wall on one side, but some cases of TS are bilateral. The pain is usually dull and aching in character but can also be expressed as a pleuritic pain. Movements involving chest wall such as sneezing, coughing, deep breathing and physical activity may exacerbate the pain [17].

Signs of the TS include erythematous swelling of the second or third costosternal cartilage on inspection, and tenderness on palpation. The reproduction of pain with palpation is useful to rule out acute myocardial infraction [18]. Lung auscultation must be performed to rule out spontaneous pneumothorax and should be normal in TS.

Laboratory tests usually show elevated inflammatory parameters on blood chemistry such as leukocytosis, elevated erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) levels, thus they are nonspecific and usually inconclusive. Imaging studies which may be performed include posterior-anterior (PA) chest x-ray, ultrasonography, magnetic resonance imaging (MRI), and nuclear imaging studies such as bone scintigraphy with technetium-99 [19]. PA chest x-rays can rule out spontaneous pneumothorax and cartilage tumors.

Ultrasonography and MRI may reveal edema and non-specific inflammation in the costochondral cartilage. MRI can also rule out cartilage tumors of the chest wall with good accuracy. Bone scintigraphy with technetium-99 may be used to rule out neoplasms of the cartilage tissue. Electrocardiography should be performed in cases in which AMI is suspected. The presence of ST segment changes, new-onset left bundle branch block, presence of Q waves, and new-onset T wave inversion increase the likelihood of acute coronary syndrome or acute myocardial infarction [7].

Treatment

Management of TS is conservative in nature. Limiting the movement of involved costochondral cartilage by activity restriction and oral non-steroid anti-inflammatory drugs (NSAID) with or without topical agents are usually adequate for the treatment of TS. Local cold application over the affected site may relieve tissue swelling. This is based upon clinical experience and widespread practice, but this approach has not been established in randomized trials [20]. The choices of NSAID include naproxen sodium (220 mg tablet, 2x1 or 2x2 tablets daily), ibuprofen (200 mg tablet, 3-4x2-3 tablets daily) and flurbiprofen (100 mg tablet, 2x1 tablets daily). There is no consensus for the duration of NSAID treatment; while we prefer to treat patients diagnosed with TS for 3 weeks. Patient education should include suggestions regarding abstaining from lifting heavy objects, exercise and sports including chest wall movements (such as swimming, weightlifting, martial arts), pushing heavy objects, carrying bags on the shoulder of the involved side and applying massage on the affected costochondral cartilage during the TS episode. In our clinics we suggest patients with TS to implement these lifestyle modifications for a duration of 3 weeks. Patients should also be notified that TS is a chronic disorder and recurrences are common. It should be explained that the swelling may improve slightly with treatment and lifestyle modifications but may not recover completely. Patient education should also address a common concern in these patients: The chest pain is of non-cardiac origin. The pain can be reproduced with certain physical activities during the outpatient clinics examination, which may be helpful in reassuring the patient. Scheduling a follow-up appointment four to six weeks after the initial examination to reassure the patient, assess the effectiveness of initial therapy, the need for additional therapy or further diagnostic workup is suggested [20].

In refractory cases who are unresponsive to oral NSAIDs and patients who report and increase in the swelling of the chest wall should be referred to a thoracic surgeon for further diagnosis and treatment. Local injection of corticosteroids can be performed to these refractory or severe cases of TS to relieve the symptoms [10]. Increase in the swelling of the chest wall may be secondary to a growing cartilage tumor, thus further diagnostic work-up in a thoracic surgery clinic is necessary [4]. Surgical treatment is only performed in a rare selection of patients who are refractory to medical treatment and have low qualities of life because of TS [21]. Costochondral cartilage resection sites usually tend to develop a hypertrophic scar, which is an important cosmetic cause of patient dissatisfaction and thus, decrease in the quality of life [22].

Conclusion

TS is a benign and rare cause of erythematous swelling and chest wall pain which is usually unilateral, in the second or third costochondral cartilage. It can easily be diagnosed and treated in primary care medicine practice due to its benign nature. Careful history taking and physical examination is usually enough for the diagnosis of TS, but physicians should be careful in ruling out potentially dangerous entities in the differential diagnosis of TS because of their morbidity and mortality. It should also be kept in mind that TS is a chronic cause of decrease in the quality of life and preventive medicine practices such as lifestyle modification is important in its treatment.

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