

## Spontan Coronary Artery Dissection: What a Surprise

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### Abstract

Spontaneous coronary artery dissection (SCAD) is a less recognized form of acute coronary syndrome, often observed in young female patients. Knowledge regarding the diagnosis and treatment of SCAD has increased in recent years, yet gaps in treatment persist. Herein, we present the case of an 18-year-old male student, who, without a regular exercise habit, started a football match on a rug without prior warm-up and experienced exertional chest discomfort, leading him to present to the emergency department with crushing chest pain. The patient, with ST elevation noted, underwent angiography, revealing SCAD in the left anterior descending artery. Managed conservatively, the patient was discharged on the 4<sup>th</sup> day with successful outcomes. Distinguishing between SCAD and coronary artery occlusion can be challenging, particularly in young patients without any medical history. Moreover, conservative treatment can prevent unnecessary percutaneous coronary intervention and potential complications.

**Keywords:** Athlete; coronary artery dissection; surgery.

## Spontan Koroner Arter Diseksiyonu: Ne Sürpriz

**Cite This Article:** Demirci G, Aktemur T, Yıldız M. Spontan Coronary Artery Dissection: What a Surprise. Koşuyolu Heart J 2024;27(1):60–62.

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**Submitted:** February 26, 2024

**Accepted:** March 06, 2024

**Available Online:** April 01, 2024

### Özet

Spontan koroner arter diseksiyonu (SCAD), sıklıkla genç kadın hastalarda görülen, akut koroner sendromun daha az tanınan bir şeklidir. SKAD'ın tanı ve tedavisine ilişkin bilgiler son yıllarda artmış olsa da tedavideki boşluklar devam etmektedir. Burada, düzenli egzersiz alışkanlığı olmayan, hali üzerinde futbol maçına başlayan ve egzersize bağlı göğüs rahatsızlığı nedeniyle acil servise başvuran 18 yaşındaki erkek öğrenci olusunu sunuyoruz. ezici göğüs ağrısıyla. ST elevasyonu saptanan hastaya anjiyografi yapıldı ve sol ön inen arterde SCAD görüldü. Konservatif olarak tedavi edilen hasta 4. günde başarılı sonuçlarla taburcu edildi. SCAD ile koroner arter tikanıklığını ayırt etmek, özellikle herhangi bir tıbbi geçmişi olmayan genç hastalarda zor olabilir. Ayrıca konservatif tedavi gereksiz perkütan koroner müdahaleyi ve olası komplikasyonları önlüyor.

**Anahtar sözcükler:** Sporcu; koroner arter diseksiyonu, ameliyat.

### Introduction

Spontaneous coronary artery dissection (SCAD) is an underdiagnosed cause of acute coronary syndrome (ACS), often requiring a high level of clinical suspicion for accurate diagnosis.<sup>[1]</sup> We present a case encouraging the inclusion of SCAD in the differential diagnosis of chest pain, even in young male patients without cardiovascular risk factors.

### Case Report

An 18-year-old patient with no previous medical history presented to the emergency department with substernal crushing chest pain, which started while playing football on a rug without prior warm-up and continued throughout the training session. The patient had no history of smok-

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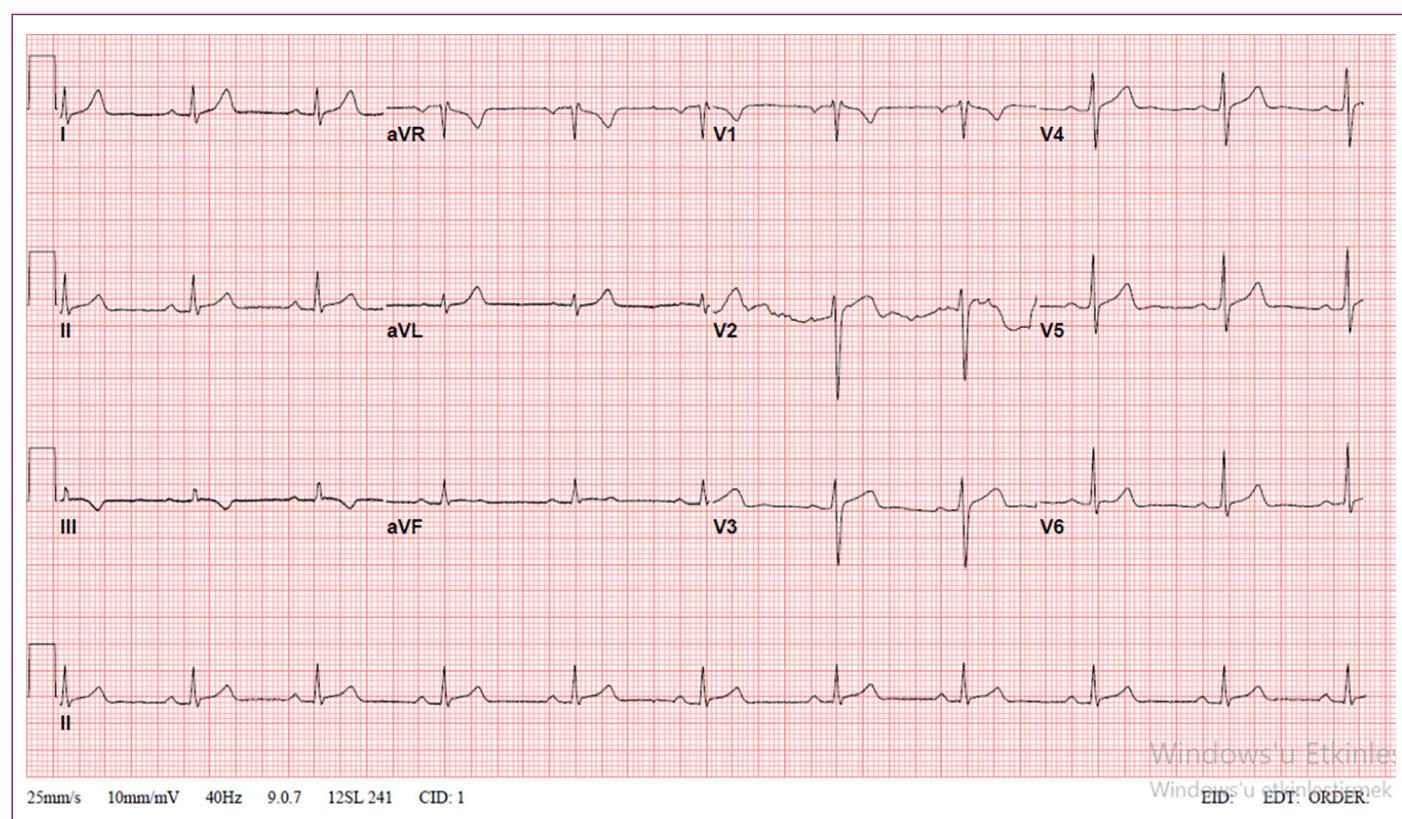
ing or medication use, and a physical examination revealed no significant findings. Electrocardiography showed anterior ST elevation consistent with acute ST-segment elevation myocardial infarction (STEMI), prompting urgent catheterization (Fig. 1). Echocardiography revealed an ejection fraction of 65%, with no valve pathology. The patient's angiography showed a thrombosed lesion appearance extending from the proximal to mid region of the left anterior descending artery (LAD), which was compatible with SCAD (Fig. 2). The patient received 300 mg aspirin, 180 mg ticagrelor, and intravenous heparin, with tirofiban infusion initiated. A decision for repeat angiography was made 48 h later, and the patient was transferred to the coronary intensive care unit. The follow-up angiography performed after 48 h showed regression of the stenosis in the LAD and the existing thrombotic appearance (Fig. 3). The patient was discharged on aspirin, ticagrelor, metoprolol, and statin therapy and was found to be in good condition without active complaints during the 1-month follow-up.

## Discussion

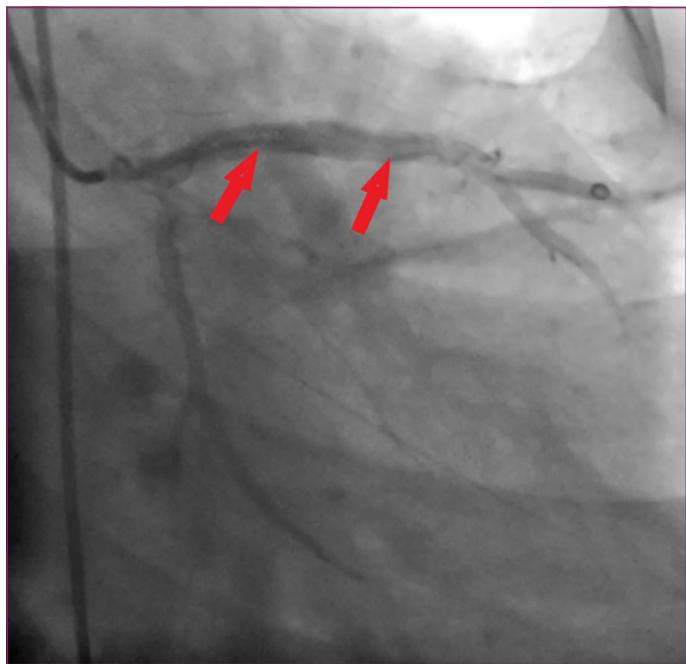
SCAD is a cause of myocardial infarction that is not attributable to trauma, atherosclerosis, or iatrogenic causes. SCAD is estimated to account for 1–4% of ACS cases, but the true prevalence remains unclear, possibly due to underdiagnosis.<sup>[1]</sup> SCAD is more common in women, accounting for 87–95% of cases, with a mean age at presentation between 44 and 53 years, and often with minimal traditional ACS risk factors.<sup>[2]</sup> SCAD is characterized by sudden, non-iatrogenic rupture of

the coronary artery wall, resulting in the formation of a false lumen within the arterial wall layers. This rupture may occur due to internal or external forces. Regardless of the underlying cause, it impairs blood flow to the coronary artery and ultimately leads to myocardial ischemia.<sup>[3]</sup> It has been associated with female gender, pregnancy, infertility treatment, migraine, hypothyroidism, and connective tissue diseases.<sup>[4]</sup> The disease is rarer in men; if these men are affected, they tend to be younger and develop SCAD with activities such as isometric exertion or heavy lifting. Exercise increases shear stress, which likely initiates dissection.<sup>[5]</sup> In our case, the young male patient, who had no risk factors, exerted himself intensely without exercising and started to have chest pain.

The vessel most commonly affected by SCAD is the LAD in 60% of cases. However, while the left circumflex artery is the responsible vessel in 38% of cases, it can also be observed less frequently in the right coronary artery and left main coronary artery.<sup>[6]</sup> Chest pain is the most common symptom, and most patients initially present with STEMI or non-STEMI. Less common manifestations include ventricular arrhythmias (5%), sudden cardiac death (0.8%), and cardiogenic shock (2%). Initially, the troponin value may be normal and the ejection fraction is usually normal on echocardiography.<sup>[7]</sup> If a case (troponins, ECG, and echocardiogram) is suspicious for ischemia or SCAD, a coronary angiogram is the diagnostic method of choice. Findings of SCAD on angiogram include multiple radiolucent lines, contrast staining, false lumen appearance, and possible spiral dissection. Intra-



**Figure 1.** Electrocardiography showed anterior ST elevation consistent with acute ST-segment elevation myocardial infarction.



**Figure 2.** Angiographic image of spontaneous coronary artery dissection.



**Figure 3.** Angiographic image after treatment.

vascular ultrasound is another approach to diagnosing SCAD and is preferred when invasive angiography is not diagnostic or contraindicated (one).

At present, there is no general information on the treatment of SCAD in current guidelines. Because the vessel wall typically heals spontaneously, conservative treatment including beta-blockers, single antiplatelet therapy, and guideline-directed medical therapy in cases of reduced ejection fraction is often preferred.<sup>[1]</sup> Patients with hemodynamic instability, ongoing ischemia, or unstable ventricular dysrhythmia may

require PCI; However, this approach should be approached with caution due to the potential for iatrogenic dissection and low success rates.<sup>[8]</sup> There are no powered studies evaluating the consequences of weight and aerobic restrictions for physical activity in patients with SCAD. Long-term recommendations should also be individualized, but patients should avoid intense endurance training, exercise in extreme temperatures, and highly competitive sports.<sup>[2]</sup>

## Conclusion

Especially in young patients presenting with chest pain, caution should be exercised in terms of SCAD and conservative treatment should be given priority.

## Disclosures

**Informed Consent:** Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

**Authorship Contributions:** Concept – G.D.; Design – M.Y.; Supervision – T.A.; Funding – G.D.; Materials – G.D.; Literature search – G.D.; Writing – T.A.; Critical review – G.D., M.Y.

**Conflict of Interest:** All authors declared no conflict of interest.

**Use of AI for Writing Assistance:** Not declared.

**Financial Disclosure:** The authors declared that this study received no financial support.

**Peer-review:** Externally peer-reviewed.

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