

## Intercoronary continuity between the right and circumflex coronary arteries causing myocardial ischemia

### Sağ ve sirkumfleks koroner arterler arasında miyokart iskemisine neden olan koroner devamlılık

Taner Ulus, M.D., Bülent Görenek, M.D., Hüseyin Uğur Yazıcı, M.D., Hande Özduman, M.D.

Department of Cardiology, Medicine Faculty of Osmangazi University, Eskişehir

**Summary** – Intercoronary continuity refers to a bidirectional flow in patients with normal coronary arteries. Although such connections have been proposed to have a protective role against potential obstructive coronary artery disease, their functional significance is unclear. We report on a 53-year-old woman who presented with typical chest pain. Exercise myocardial perfusion imaging revealed perfusion defects involving the basal regions of the inferior and inferoseptal walls. Coronary angiography showed an intercoronary continuity between the right coronary artery and circumflex artery. Following institution of medical therapy, the patient's complaint improved and she had no complaint during one-year follow-up. This is the first reported case in which an intercoronary continuity was associated with myocardial ischemia.

**Özet** – Koroner bağlantı, koroner arterleri normal olan hastalarda iki yönlü akım olarak tanımlanır. Bu bağlantıların, tıkaçıcı koroner arter hastalığına karşı miyokard koruyucu rol oynayabileceği ileri sürülmüşse de, bu durumun fonksiyonel önemi bilinmemektedir. Bu yazıda, tipik göğüs ağrısı ile başvuran 53 yaşında bir kadın hasta sunuldu. Egzersiz miyokart perfüzyon sintigrafisinde, inferiyor ve inferoseptal duvarların tabanlarını tutan perfüzyon defektleri saptandı. Koroner anjiyografide, sağ koroner arter ile sirkumfleks arter arasında koroner bağlantı görüldü. Medikal tedaviye başlanmasından sonra hastanın yakınması düzeldi ve bir yıllık takibi sırasında başka yakınma görülmedi. Koroner bağlantının miyokart iskemisine neden olduğu bir olgu literatürde ilk kez bildirilmektedir.

Intercoronary continuity refers to a large anastomotic connection between normal coronary arteries. The true prevalence of this entity is unknown. Although such connections have been proposed to have a potential protective role in the myocardium against obstructive coronary artery disease,<sup>[1]</sup> their functional significance is unclear. We present the first case in the literature in which an intercoronary continuity was associated with myocardial ischemia.

#### CASE REPORT

A 53-year-old woman presented with a complaint of typical chest pain of three-month history. She had no risk factors for CAD. Physical examination and electrocardiogram were normal. Transthoracic echocardiography showed normal left ventricular function. Exercise

myocardial perfusion imaging revealed perfusion defects involving the basal region of the inferior wall and the inferoseptal wall (Fig. 1a). Then, the patient was transferred to coronary angiography. Selective left and right coronary injections showed normal left anterior descending artery, circumflex artery, and right coronary artery (Fig. 1b-d). During the right coronary injection, the proximal, mid and distal portions of the Cx were simultaneously visualized together with the RCA. An intercoronary continuity was seen between the RCA and Cx (Fig. 1c, d).

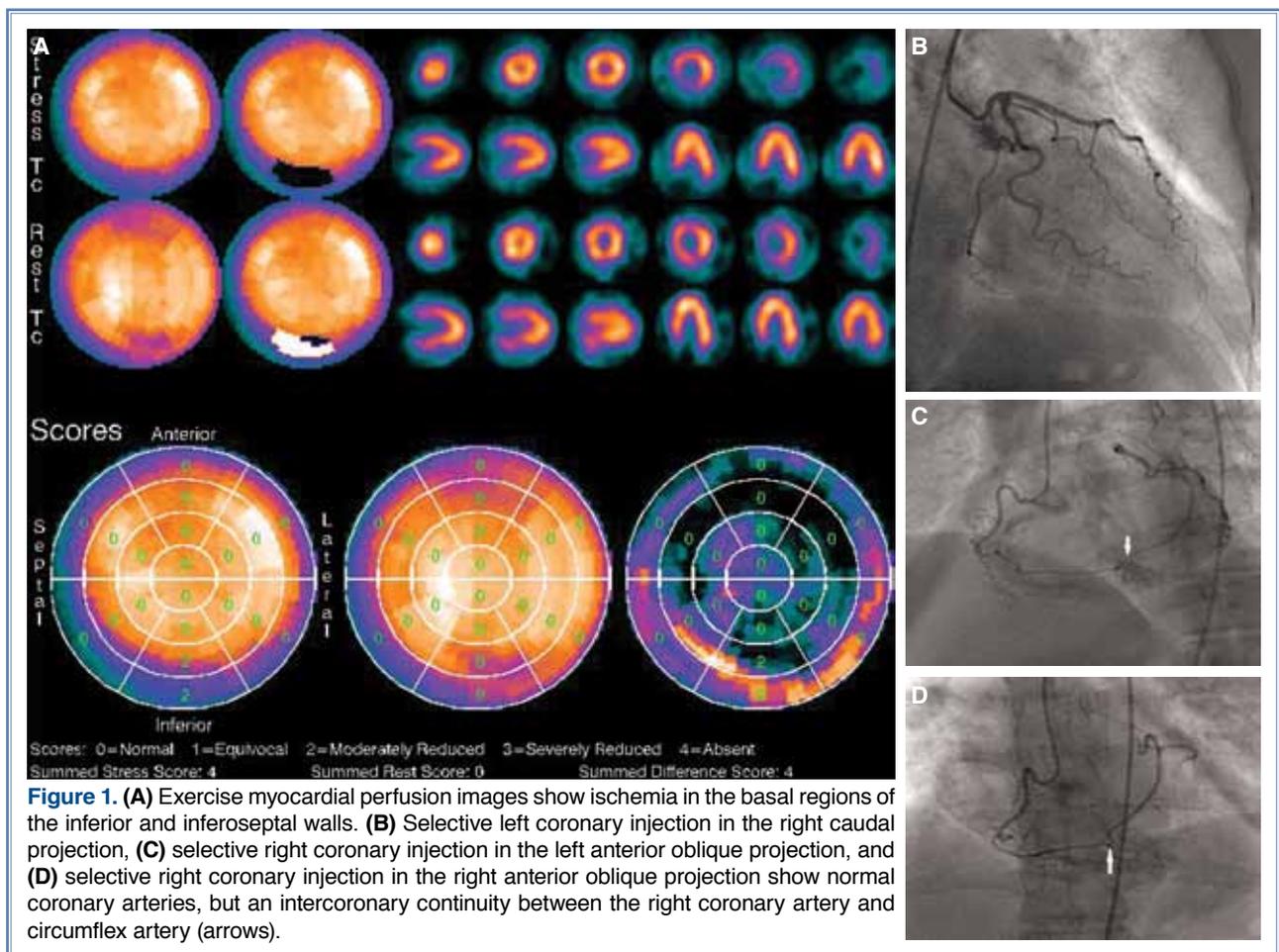
Medical therapy was instituted consisting of aspirin 100 mg/day, metoprolol 50 mg/day, and isosorbide mononitrate 50 mg/day. She was followed-up for one year without any complaint.

#### Abbreviations:

CAD	Coronary artery disease
Cx	Circumflex artery
RCA	Right coronary artery

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Correspondence: Dr. Taner Ulus. Eskişehir Osmangazi Üniversitesi Tıp Fakültesi, Kardiyoloji Anabilim Dalı, 26480 Eskişehir, Turkey. Tel: +90 222 - 239 37 00 e-mail: tanerulus@hotmail.com



## DISCUSSION

Intercoronary continuity is a congenital open-ended connection with bidirectional flow between two major epicardial coronary arteries.<sup>[2]</sup> Atak et al.<sup>[3]</sup> and Arat-Ozkan et al.<sup>[4]</sup> reported their individual cases among 7,086 and 12,674 angiograms, respectively. In a post-mortem study of 100 human hearts, it was detected in seven cases.<sup>[5]</sup> Two types have been described, with continuity lying between the Cx and RCA in the posterior atrioventricular groove, and between the left anterior descending artery and the posterior descending artery in the distal atrioventricular groove.<sup>[6]</sup> Intercoronary connection is a single straight epicardial vessel with a diameter of  $\geq 1$  mm and composed of layers of a typical muscular artery, connecting the terminal portions of major epicardial vessels.<sup>[2]</sup>

Although some authors speculated that these connections may have a potential protective role in the myocardium against obstructive CAD,<sup>[1]</sup> their functional significance remains unclear. Our case of inter-

coronary continuity was associated with myocardial ischemia, which we think is the first reported feature in the literature. In our case, myocardial ischemic areas corresponded to the distribution of the RCA. We think that myocardial ischemia might be the result of coronary steal phenomenon in coronary vessels contributing to the intercoronary continuity. In this respect, this entity may have a detrimental effect on myocardial perfusion. We demonstrated ischemia by myocardial perfusion imaging. The complaint of the patient improved after initiation of medical therapy.

In conclusion, intercoronary continuity should not always be regarded as a potential 'self-cure' against obstructive CAD, and may lead to myocardial ischemia.

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- Key words:** Chest pain/etiology; coronary angiography; coronary vessel anomalies; myocardial ischemia/etiology.
- Anahtar sözcükler:** Göğüs ağrısı/etyoloji; koroner anjiyografi; koroner damar anomalisi; miyokart iskemisi/etyoloji.