Cukurova Medical Journal

Olgu Sunumu / Case Report

Coronary Fistula as a Cause of Coronary Ischemia in Geriatric Age

Geriatrik Yaşta Koroner İskemi Nedeni Olarak Koroner Fistül Olgusu

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Cukurova Medical Journal 2013; 38 (4): 783-786.

ABSTRACT

Coronary fistulas are abnormal connections which form between coronary arteries and cardiac chambers or other vessels. Fistulas are frequently congenital and sometimes may be acquired. In 9% of the cases the symptoms appear before the age of 20. After the age of 20, 55% of the cases become symptomatic. The rate of being symptomatic increases further in advanced ages. The symptoms may be related with coronary ischemia, pumonary hypertension, heart failure or arrhthymia. The mechanism of coronary ischemia may be related with the phenomenon of coronary steal or runoff. Although the symptoms are frequently related with coronary ischemia in the geriatric age group, most symptoms which occur before the age of 20 are related with left-to-right shunt. The aim of the presentation of this patient was to examine the pathophysiology of occurence of a congenital coronary fistula with angina, ischemia and dyspnea in the geriatric age after staying asymptomatic for years.

Key Words: Geriatric Age, Coronary Fistula, Coronary ischemia

ÖZET

Koroner fistüller, koroner arterler ile kalp boşlukları ya da diğer damarlar arasında oluşan anormal bağlantılardır. Fistüller çoğunlukla konjenital, bazen de akiz olarak oluşabilir. Vakaların %9' unda semptomlar 20 yaşından önce ortaya çıkar. 20 yaşından sonra vakaların %55' i semptomatik hale gelir. İlerleyen yaşlarda semptomatik olma oranı daha da artmaktadır. Semptomlar; koroner iskemi, pulmoner hipertansiyon, kalp yetmezliği veya aritmi ile ilişkili olabilir. Koroner iskemi oluş mekanizması koroner steal fenomenine veya runoff 'a bağlı olabilir. Geriatrik yaş grubunda semptomlar çoğunlukla koroner iskemiyle ilişkili olmasına karşın 20 yaşından önce çıkan semptomların çoğu sol-sağ şanta aittir. Bu olgu sunumunun amacı konjenital olan bir koroner fistülün yıllarca asemptomatik olarak kaldıktan sonra geriatrik yaşta anjina, iskemi ve dispne ile ortaya çıkmasının patofizyolojisini irdelemektir.

Anahtar Kelimeler: Geriatrik Yaş, Koroner Fistül, Koroner İskemi

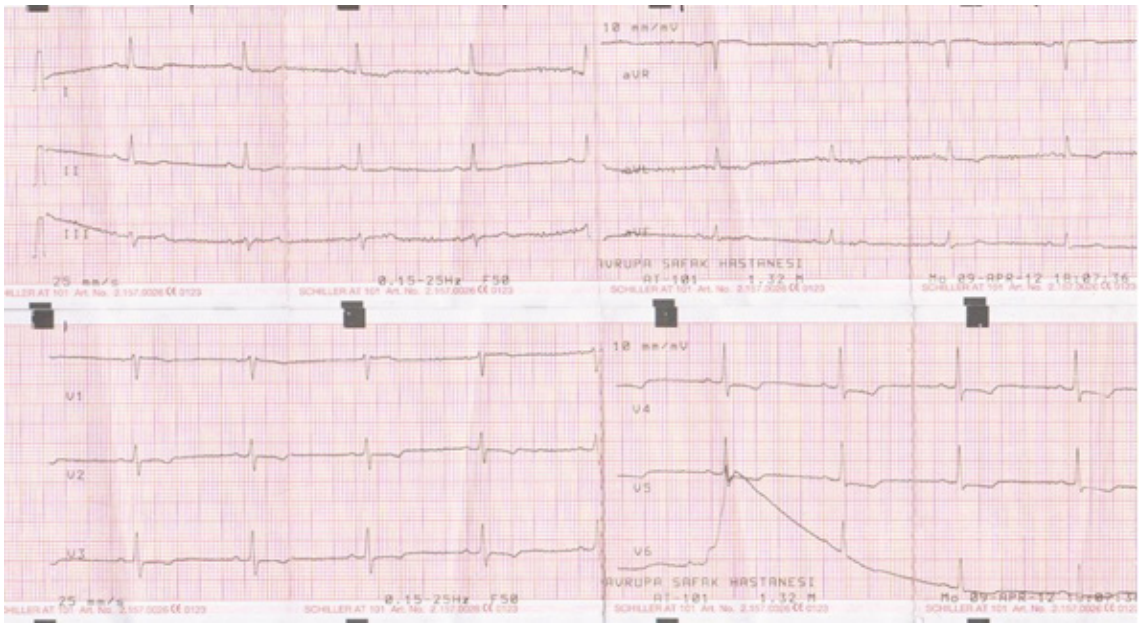
Coronary fistulas are abnormal connections which form between coronary arteries and cardiac chambers or other vessels[1]. Fistulas are frequently congenital and sometimes may be acquired. In 9% of the cases the symptoms appear before the age of 20. After the age of 20, 55% of the cases become symptomatic. The rate of being symptomatic increases further in advanced ages. The symptoms may be related with coronary ischemia, pumonary hypertension, heart failure or arrhthymia. The mechanism of coronary ischemia may be related with the phenomenon of coronary steal or runoff.

Although the symptoms are frequently related with coronary ischemia in the geriatric age group, most symptoms which occur before the age of 20 are related with left-to-right shunt. The aim of the presentation of this patient was to examine the pathophysiology of occurence of a congenital coronary fistula with angina, ischemia and dyspnea

in the geriatric age after staying asymptomatic for years.

CASE REPORT

A 65-year-old female patient was internalized from the emergency unit where she presented with chest pain, dyspnea and palpitation. On physical examination her blood pressure was found to be 100/60 mmHg and her pulse rate was found to be 98 beats/min. Other physical examination findings were found to be normal. On electrocardiogram, coronary ischemia findings were present (ECG of the patient). Medical treatment was started in the patient whose cardiac enzymes were found to be normal. The patient who received medical treatment for three days was referred to our clinic for coronary angiography. Echocardiography was found to be normal except for left ventricular type II diastolic dysfunction. The patient had no known major risk factor for coronary artery disease. Coronary angiography revealed a fistula with opaque flow from the left anterior descenent coronary artery and circumflex artery to the left ventricle (Figure 1 and/or Figure 2). Medical treatment was planned for the patient whose coronary arteries were found to be normal. Tc-99m MIBI myocardial perfusion study revealed anteroapical and inferoapical ischemia. Coil embolization was not considered appropriate. Beta blocker and acetylsalicylic acid were started in the patient who refused the surgical option. Prophylaxis against infective endocarditis was recommended for future surgical procedures. The patient has been followed up in our clinic for the last 8 months without any symptoms.



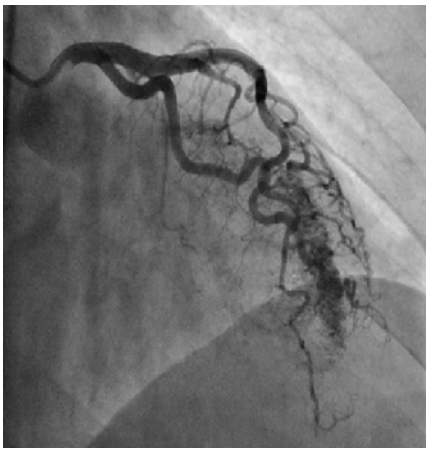


Figure 1 and 2. Coronary fistulization from LAD and CX to the left ventricle.

DISCUSSION

Although most coronary fistulas are congenital, they may sometimes occur as a result of angioplasty, myocardial biopsy and pace erosion complication. Coronary fistula is observed in 0,1-0,2% of the patients who undergo angiography[1,2]. Its frequency in our country has been reported to be 0,08%[3]. 55% of the fistulas originate from the right coronary artery and its branches and 35% originate from the left coronary artery. 40% drain into the right ventricle, 26% drain into the right atrium and 3% drain into the left ventricle. 9% of the symptoms related to coronary fistulas occur before the age of 20 and 55% occur after the age of 20. As the age advences, the possibility of occurence of symptoms increases further[1,4]. Occurence of symptoms with a higher rate in the geriatric age group which is known to be 65 years and older is a result of the pathophysiology of fistula. Most developed world countries have accepted the chronological age of 65 years as a definition of elderly or older person[5].

In treatment of coronary fistulas which were defined in 1865 by Krause for the first time, percutaneous closure methods started to become an alternative in 1983 to surgical closure procedure which was initiated by Bjork and Crafoord in 1947. Coil, stent and occluder have been used percutaneously[6,7]. Transthoracic Echocardiography, Multidedector Computerized Tomography, Magnetic Resonance, Myocardial Perfusion Scintigraphy and coronary angiography are directive in the diagnosis and follow-up of coronary fistulas.

Increase in coronary ischemia in fistulas in parallel to age may be explained by its pathophysiology[4]. While small fistulas do not cause significant coronary ischemia, large fistulas may cause ischemia by leading to coronary steal phenomenon or runoff. Coronary steal arises from diastolic pressure gradient or blood flow from the coronary bed towards the chamber with low pressure (runoff). Thus myocardial blood flow decreases and coronary ischemia occurs. In large fistulas, coronary diastolic perfusion pressure decreases progressively. It is known that coronary perfusion pressure = Arterial Diastolic Pressure – Left Ventricular End Diastolic Pressure. It is known that the end diastolic pressure of the left ventricle decreases with age. This may decrease the coronary perfusion pressure and cause coronary ischemia in the fistulas. In time, the fistula gradually enlarges and may lead to frank aneurism formation, intimal ulceration, medial degeneration, atherosclerotic changes, calcification, collateral obstructions, mural thrombosis and fistula ruptures. Fistulas which drain into the left atrium imitate the

physiology of mitral failure and the coronary fistulas which drain into the left ventricle imitate the physiology of aortic failure. These pathophysiologic changes may be the mechanism of the anginal pain which occurs in the advanced ages in relation with the fistula. Fistulas which may enlarge in time by degeneration may cause a picture of heart failure related to high output[4,6,7].

In our patient, the presence of type II diastolic dysfunction may be involved in the decrease in coronary perfusion pressure and occurence of coronary steal phenomenon. Occurence of symptoms of coronary fistulas especially after the age of 20 may be related with the pathophysiologic state explained. In our case, sudden chest pain and dyspnea in the patient who had no complaints until the geriatric age may be related with coronary ischemia and heart failure with high output.

Conclusively, coronary fistulas may stay asymptomatic until the geriatric age, though they are congenital. We examined this patient with coronary fistula who stayed asymptomatic until the geriatric age and developed symptoms later in order to draw attention to the pathophysiology of coronary fistulas.

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geliş tarihi/received :28.02.2013
kabul tarihi/accepted:01.04.2013