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EKG'de anteroseptal miyokart enfarktüsünü düşündüren tek başına sağ ventrikül miyokart enfarktüsü: Olgu sunumu

Isolated right ventricular myocardial infarction suggesting anteroseptal myocardial infarction on ECG: a case report

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Özet– Bu yazıda, EKG'de akut anteroseptal miyokart enfarktüsü (ME) şüphesi ile koroner anjiyografi yapılan, buna karşın sağ koroner arterin (RCA) proksimal bölümünde tıkanma saptanan tek başına sağ ventrikül ME'li bir olgu sunuldu. Altmış beş yaşındaki kadın hasta bir saat önce gelişen bilinç kaybı ile acil servise getirildi. Hastanın öyküsünden beş gün önce RCA proksimaline stent takıldığı öğrenildi. EKG'de V1'den V4'e yüksekliği gittikçe azalan tarzda ST segment yüksekliği, DIII ve aVF'de patolojik Q dalgaları vardı. EKG'deki ritmi AV tam blok ile uyumluydu. Yapılan koroner anjiyografide RCA proksimalindeki stentin trombüs ile tıkandığı görüldü. Sol ön inen koroner arterin orta kısmında %50, distal kısımda %60 darlık saptandı. Sirkumfleks koroner arter ise normal olarak bulundu. RCA proksimalindeki stent içi trombotik %95 lezyona perkütan koroner balon anjiyoplasti uygulandı ve tam açıklık sağlandı. Sunulan olguda V1'den V4'e yüksekliği giderek azalan ST segment yükselmesi vardı.

Summary– In this article, we present a case with isolated right ventricular myocardial infarction (MI) who underwent coronary angiography on suspicion of acute anteroseptal MI detected on ECG; however, occlusion of the proximal right coronary artery (RCA) was detected. A female patient aged 65 years was brought to the emergency room due to loss of consciousness 1 hour before. From the patient's history, it was understood that she had undergone stent implantation into her proximal RCA 5 days before. On ECG, ST segment elevation with decreasing amplitude from V1 to V4 was seen, and pathologic Q waves were present in DIII and AVF. A complete AV block was detected on ECG. On the coronary angiogram, stent thrombosis in the proximal RCA was seen. Stenosis detected in the mid-left anterior descending artery was 50% and at the distal part was 60%. The circumflex coronary artery was found to be normal. Percutaneous transluminal coronary angioplasty was performed for the 95% thrombotic lesion in the stent of the proximal RCA, and full patency was established. In our case, ST segment elevation with a decreasing

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Sağ ventrikül ME'si genellikle baskın olmayan ve kollateral almayan RCA'nın proksimal segmentinin ani tıkanmasıyla oluşur. Sunulan olguda ise RCA baskın değildi ve RCA proksimalindeki stentin trombüs ile ani tıkanması mevcuttu. Baskın olmayan RCA'nın tam tıkanıklığı, sol ventrikülün kanlanmasını bozmadığı için sol ventrikül enfarktına neden olmaksızın izole sağ ventrikül ME ile karşımıza çıkabilir.

amplitude from V1 to V4 was seen. Right ventricular MI usually occurs secondary to an acute stenosis of the non-dominant proximal RCA branch that does not receive collateral flow. In our case, RCA was codominant and an acute stenosis of the stent in the proximal RCA was present. Occlusion of the non-dominant RCA can appear as isolated right ventricular MI without causing a left ventricular infarct, since it does not feed the left ventricle.

Abbreviations:

AV *Atrioventricular*
EKG *Electrocardiography*
MI *Myocardial infarction*
RCA *Right coronary artery*

In acute myocardial infarction (MI) electrocardiography (EKG) provides important information about location of myocardial infarct, and identification of the occluded coronary artery. Right ventricular MI associated with inferior MI, is a well known, and frequently encountered condition.[1] Since isolated right ventricular MI is seen quiet rarely, its EKG signs are usually overlooked. Isolated right ventricular MI occurs as a result of occlusion of a non-dominant right coronary artery (RCA) branch which supplies the right ventricle.

In this case report, we present a case with an isolated right ventricular MI who underwent coronary angiographic examinations with the suspect stent thrombosis, which in fact revealed a stent thrombosis involving proximal segment of RCA.

CASE PRESENTATION

A 65-year-old female patient was brought to the emergency room because of loss of consciousness developed one hour previously. From her medical history, it was learnt that a stent had been implanted into proximal RCA 5 days ago. On her physical exam , blood pressure and pulse rate were found to be 100/75 mmHg , and 38bpm, respectively. Her auscultated pulmonary sounds were unremarkable. Peripheral pulses were not abnormal. Jugular vein distension was noted. Pretibial edema, hepato-, and splenomegaly were not detected. On ECG, a ST segment elevation with a decreasing amplitude from V1 to V4, and pathologic Q waves in DIII and AVF were detected. Heart rhythm tracings were consistent with complete AV block (Figure 1).

The patient was urgently brought into the catheterization laboratory, and a transient pacemaker was implanted. Coronary angiography demonstrated occlusion of proximal RCA with a stent

thrombosis (Video 1*). Stenotic mid- (50 %) , and distal (60%) segments of the left anterior descending artery were detected. Circumflex coronary artery was of normal caliber (Video 2*). Percutaneous coronary balloon angioplasty was applied on the in-stent thrombotic lesion which caused a 95 % stenosis in the proximal RCA, and full patency was ensured (Video 3*).

Soon after balloon angioplasty procedure targeted at relieving her stent thrombosis, complete AV block resolved completely. On electrocardiograms obtained one day later, disappearance of ST- segment elevation, but persistence of abnormal Q waves in DIII, and aVT were seen (Figure 2).

Transthoracic echocardiograms of the patient revealed a 50 % ejection fraction, and preservation of the left ventricular function with decreased contractility of the right ventricle.

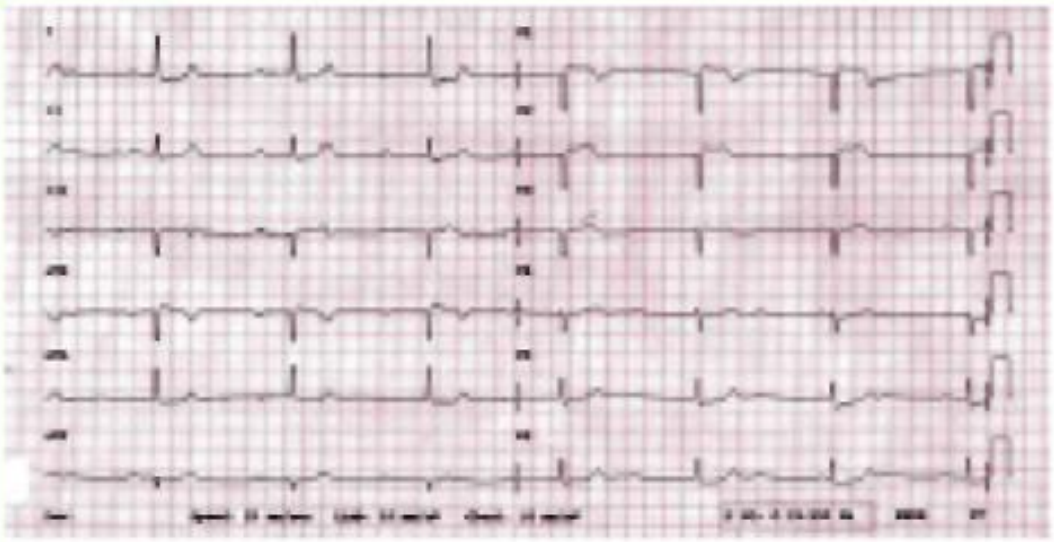

Figure 1. On EKG, Qs pattern in V1, and V3 suggesting anteroseptal MI; abnormality Q waves are seen in DIII, and aVF. Heart rythm is consistent with complete AV block

DISCUSSION

Apart from MI, premature depolarization, Prinzmetal angina, left ventricular bundle branch block, left ventricular hypertrophy, pericarditis, left ventricular aneurysm, Brugada syndrome, and Takotsubo syndrome can be enumerated as conditions which induce ST-segment elevation in anterior leads.

In Brugada syndrome, on EKG, right bundle branch block concomitantly with ST-segment elevation in V1-V3 leads are observed. In our case, ST-segment elevation was detected in V1-V3, without any morphological evidence of right bundle branch block.

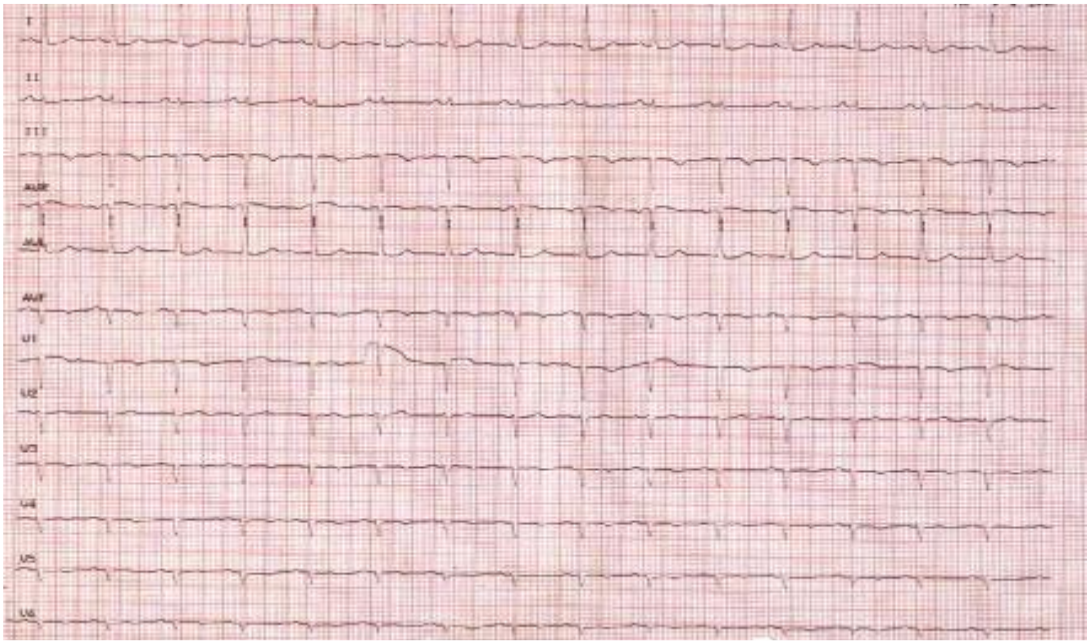

Figure 2. Normal sinus rhthm is seen. Amplitude of ST segment was normalized. Abormal Q waves are noted in DIII, and aVF.

In Takotsubo cardiomyopathy, echocardiograms demonstrate left ventricular systolic dysfunction, and generally apical ballooning is seen. Coronary angiograms are unremarkable without any coronary artery disease. In our case presence of stent thrombosis in RCA, and normal ventricular systolic functions discarded the possibility of Takotsubo cardiomyopathy

Premature repolarization is defined as the presence of J point, and ST-elevation at least 1 mm (0.1 mV) above the isoelectric baseline on EKG. In this group of patients ST-segment elevation can not be explained by the presence of another etiological factor.

In Prinzmetal angina, chest pain, and transient ST-segment elevation occur. On coronary artery angiograms, coronary artery spasms are observed. In pericarditis, widespread ST-segment elevation in all derivations, and chest pain specific to pericarditis are noted.

In nearly 40-50% of the patients with inferior MI, partial involvement of the right ventricle is seen.[2] However in necroptic studies, isolated right ventricular myocardial infarction have been demonstrated only in 1.7-2.4 % of patients with MI. Isolated right ventricular MI is recognized by ST-segment elevation with a decreasing amplitude from V1 to V4 without any subsequent occurrence of Q wave. Its EKG imitates anterior wall MI.[3] In our case, ST-elevation on EKG gradually decreased in amplitude from V1 to V4. Right ventricular MI generally develops as a result of sudden occlusion of non-dominant proximal segment of RCA which does not receive collateral blood flow.[4] In our case non-dominant RCA was occluded with a stent thrombosis in its proximal segment

Right ventricular MI is characterized by hypotension, neck vein distension, and subtle pulmonary symptoms. If it is not associated with ST-segment elevation in inferior leads, it can be easily overlooked.

Non-dominant RCA supplies free wall of the right ventricle, and also AV

node. Complete AV block was seen in our case, and decreased contractility of the right ventricle was noted on echocardiograms. Since complete occlusion of non-dominant RCA does not impair perfusion of the left ventricle, complete occlusion of the non-dominant RCA can manifest itself with isolated right ventricular infarct without triggering left ventricular infarct.

In conclusion, in cases with suspect anteroseptal MI whose EKGs demonstrate ST-segment elevation with a decreasing amplitude from V1 to V4, the culprit lesion must be thought to be possibly located in the proximal segment of non-dominant RCA.

*Video files are available in the website address of the article

Conflict of interest: None declared

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Anahtar sözcükler: Kalp ventrikülü; koroner anjiyografi; koroner dolaşım/fizyoloji; miyokart enfaktüsü/fizyopatoloji; ventrikül fonksiyonu, sağ/fizyoloji.

Key words: Cardiac ventricle; coronary angiography; coronary circulation/physiology; myocardial infarction/physiopathology; ventricular function, right/physiology.

Video 1. A thrombotic lesion in a 95 % stenotic proximal RCA seen in the right anterior oblique view

Video 2. Stenotic mid- (50%) , and distal (60 %) segments of LAD

Video 3. Complete post-PTCA patency was ensured in proximal RCA.