

Rapid retraction of a post-infarction intramyocardial dissecting hematoma

Hızla gerileyen bir miyokart içi hematom olgusu

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Summary– A 60-year-old male with a recent anterior myocardial infarction (MI) was referred to our hospital for implantable cardioverter defibrillator (ICD) implantation. He was on the 42nd day of MI and clinically stable on admission. Electrocardiography showed right bundle branch block with QS pattern on anterior leads. Transthoracic echocardiographic examination revealed an ejection fraction of 25% with akinesis of the apex and mid-apical segments of anterior and septal walls. In the apical-septal region, a pulsatile cavity with systolic expansion surrounded by a thin endomyocardial border was visualized. Color-Doppler interrogation did not demonstrate any flow within that structure. These findings suggested an intramyocardial dissecting hemorrhage formed after MI. Cardiac magnetic resonance imaging also confirmed an intramyocardial hematoma in the mid-apical anteroseptal region. A conservative approach was assumed as the patient was hemodynamically stable. The planned ICD implantation was postponed due to the high risk of perforation. Subsequently, oral anticoagulant therapy with warfarin was initiated against risk of intracardiac thrombus formation. The existing dual antiplatelet therapy was also continued. One week after hospital discharge, he was rehospitalized due to a very high INR of 6.3. The repeated transthoracic echocardiography revealed an almost complete resolution of the intramyocardial dissecting hematoma and adhesion of the surrounding myocardial layers. Oral anticoagulant therapy was discontinued. Echocardiographic examinations showed no change compared to the last examination during hospitalization. This case illustrates a conservatively managed intramyocardial dissecting hematoma case, in which anticoagulant and antiaggregant therapy yielded a rapid retraction without any complication.

Özet– Bir buçuk ay önce ön duvar miyokart enfarktüsü nedeniyle başka bir merkezde revaskülarizasyon uygulanan ve 42. günde klinik stabilizasyon sonrası kalp içi defibrilatör (ICD) takılması amacıyla kliniğimize gönderilen 60 yaşında erkek hastanın başvuru sırasında yakınması yoktu. Elektrokardiyografide sağ dal bloğu zemininde önyüzü gören derivasyonlarda QS paterni olan hastanın transtorasik ekokardiyografisinde sol ventrikül apeksi, ön duvar ve septumun orta-apikal segmentleri akinetikti. Ejeksiyon fraksiyonu %25'ti. Ekokardiyografik incelemede, sol ventrikülün apikoseptal bölgesinde sistolde genişleyen, diastolde küçülen pulsatil bir boşluk gözlemlendi. Renkli Doppler incelemesinde, bu boşluk içerisinde akım saptanmadı. Bu bulgularla, hastada akut miyokart enfarktüsüne sekonder miyokart içi hematoma geliştiği düşünüldü. Kalbin manyetik rezonans görüntülemesi ile tanısı doğrulanan hasta, klinik olarak stabil olduğu için miyokart içi hematoma yönünden konservatif olarak izlendi. Planlanan ICD implantasyonu yüksek perforasyon riski nedeniyle ertelendi. Daha sonra, hematoma olan bölgede trombus gelişiminin önlenmesi amacıyla warfarin ile oral antikoagülan tedavi başlandı. Hastanın almakta olduğu ikili antitrombotik tedaviye de devam edildi. Taburcu edilme sonrası birinci hafta kontrolünde hastanın INR'si 6,3'tü. Aktif kanaması olmayan hastanın yapılan ekokardiyografisinde daha önce gözlenen miyokart içi hematomun tamamen yok olduğu gözlemlendi. Oral antikoagülan tedavisi kesilen hasta takipte stabil seyretti. Ekokardiyografik kontrollerinde hematomun tekrarlamadığı görüldü. Bu olguda konservatif olarak izlenen miyokart içi hematomun, antiagregan ve antikoagülan tedavi ile hızla gerilediği bildirilmiştir.

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Intramyocardial dissecting hematoma (IDH) is a rare complication of acute myocardial infarction (MI). It consists

of a cystic cavity filled with blood, which is enclosed by sheets of myocardium.^[1] Little is known about the optimal management of these patients. Although there is a certain predominance of surgical therapy, conservatively treated cases have also been reported.^[2-4] The appropriate medication is also an issue of controversy, with respect to the usage of antiaggregants and anticoagulants. We describe a case of IDH with an unexpectedly rapid resolution under conservative treatment with a high level of anticoagulation.

Abbreviations:

ICD Implantable cardioverter defibrillator
 IDH Intramyocardial dissecting hematoma
 INR International normalized ratio
 MI Myocardial infarction

CASE REPORT

A 60-year-old man with a recent anterior MI was referred to our hospital for implantable cardioverter defibrillator (ICD) implantation. He was at the 42nd day of MI and clinically stable on admission. Troponin values were in normal range. Electrocardiography showed right bundle branch block with QS pattern with inverted T waves and QT prolongation (Figure 1). Transthoracic echocardiographic examination revealed an ejection fraction of 25% with akinesis of the apex and mid-apical segments of the anterior and septal walls. At the apical-septal region, a pulsatile cavity with systolic expansion surrounded by a thin endomyocardial border was visualized. Color-Doppler interrogation did not demonstrate any flow within that



Figure 1. ECG of the patient showing pathological Q waves in anterior-inferior leads and QT prolongation.

structure (Figure 2a, b, Video 1*). These findings suggested an IDH formed after MI. For a definite diagnosis, cardiac magnetic resonance imaging (MRI) was performed, which also confirmed an intramyocardial hematoma in the mid-apical anteroseptal region (Figure 3). A conservative approach was assumed as the patient was hemodynamically stable. The plan of ICD implantation was postponed due to the high risk of perforation. Subsequently, oral anticoagulant therapy with warfarin was initiated against the risk of intracardiac thrombus formation. The existing dual antiplatelet therapy was also continued. The patient was discharged one week later in stable condition with an international normalized ratio (INR) of 2.1, and warfarin dose of 5 mg/day. In the following week, he was rehospitalized due to a very high INR value.^[3,5] The repeated transthoracic echocardiography revealed an

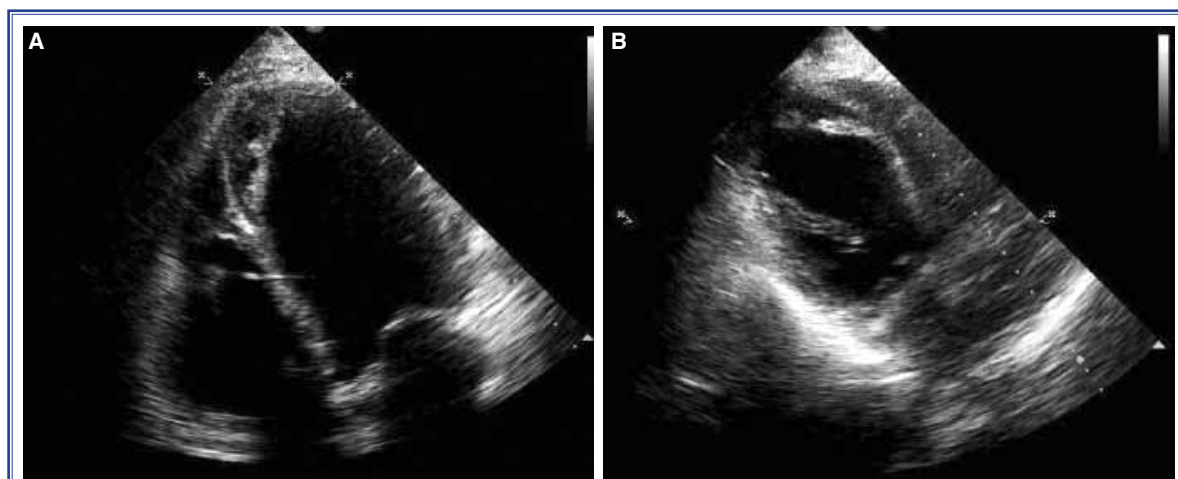


Figure 2. (A) Apical intramyocardial dissecting hematoma in four-chamber view. (B) Apical intramyocardial dissecting hematoma in two-chamber view.

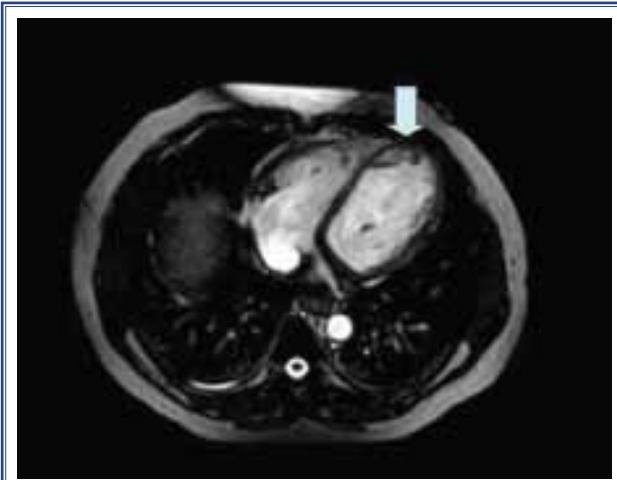


Figure 3. Hyperintense apical intramyocardial hematoma in cardiac MRI.

almost complete resolution of IDH and adhesion of the surrounding myocardial layers. Neither thrombus formation nor pericardial effusion was present in the echocardiographic examination (Figure 4a, b, Video 2*). Oral anticoagulant therapy was discontinued, and the patient was discharged on dual antiplatelet therapy after normalization of INR. In the six months following hospital discharge, serial echocardiographic examinations showed no change compared to the last examination during hospitalization. The clinical follow-up was uneventful during this period.

DISCUSSION

Intramyocardial dissecting hematoma is an unusual

form of cardiac rupture of the left ventricular wall. The underlying mechanism is a hemorrhage dissecting among the spiral myocardial fibers, creating a neocavitation limited by the myocardium.^[6] The hematoma may expand, rupturing into adjacent structures, spontaneously resolve, or transform into an organized thrombus. Because of the potential risk of fatal myocardial rupture, surgical correction was the preferred method of management for the initial cases in the literature. However, today, the high operative mortality and good clinical course of conservatively treated patients have changed the approach. At present, surgical correction is mostly preferred in hemodynamically unstable patients. In the largest published series of IDH, Vargas-Barrón et al.^[5] reported complete reabsorption in five of 15 cases with a mean 12 months of follow-up. In these five cases, IDHs were limited to the apical segments of the left ventricle. In addition, four spontaneously resolved cases of IDH were reported by different authors, all of which were also apical in location.^[7-10] Based on these observations, conservative management seems a reasonable option in patients with apical IDH. The present case also confirms this statement, in which complete resolution was evident in a relatively very short period of time compared to the previous cases. In most of the reported cases, spontaneous resolution occurred in several months. However, in this case, it took only two weeks for complete retraction. The mechanism of retraction was interpreted as spontaneous drainage of the dissecting hematoma through the endomyocardial

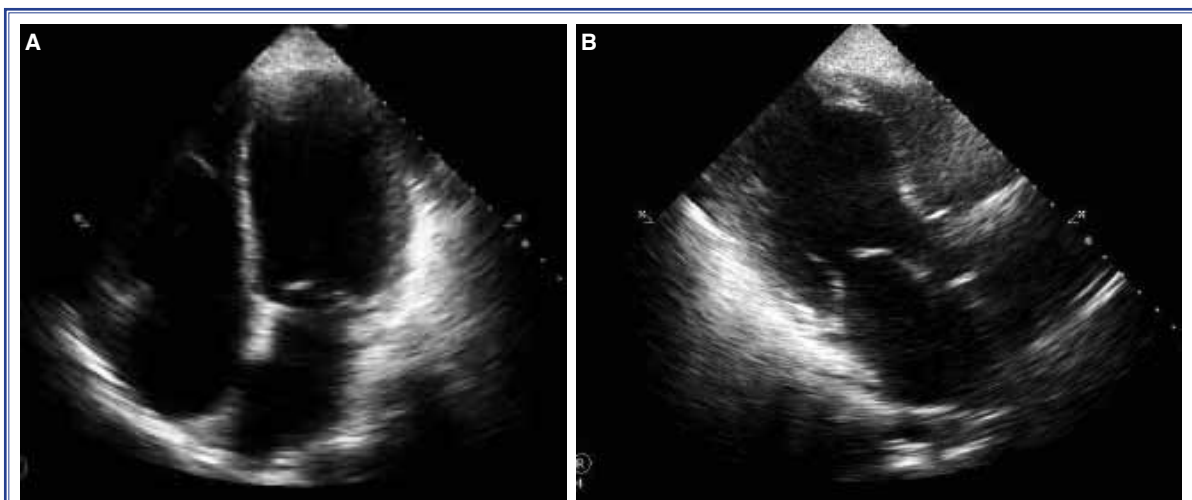


Figure 4. (A) Complete resolution of intramyocardial hematoma in apical four-chamber view. (B) Complete resolution of intramyocardial hematoma in apical two-chamber view.

layer into the left ventricular cavity. It is difficult to explain definitively this relatively shorter time course; however, the high level of anticoagulation seems to be a reasonable cause. There is no clear recommendation about the use of anticoagulants and antiaggregants in the treatment of IDH. In most of the reported cases, anticoagulants and antiaggregants were used because of other coexisting indications such as embolic stroke or visible intracardiac thrombus. Although there was no such clinical condition in this case, the use of oral warfarin and dual antiplatelet therapy resulted in a rapid retraction of the IDH. An argument could be made as to whether it is safe to use this medication solely for this entity because of the risk of rupture. Even in the presence of such a risk, further conservatively treated cases of IDH will help to clarify the issue. Another issue of discussion in conservatively treated IDH patients is the implantation of ICD and/or cardiac resynchronization therapy (CRT) device, as in this case. Hematomas in the apicoseptum of the left ventricle and right ventricle increase the risk of myocardial rupture during implantation of the leads. In our opinion, each case should be evaluated separately, weighing the advantages of such devices and risks of the procedure. As long as our case was stable on amiodarone therapy, it was preferred not to implant an ICD temporarily.

In conclusion, despite the growing awareness of IDH, many issues remain unknown, especially about its management and prognosis. This report illustrates a conservatively managed case in which anticoagulant and antiaggregant therapy yielded a rapid retraction of the hematoma without any complication. Further data are needed to make definitive recommendations regarding the follow-up of these patients.

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***Supplementary video file associated with this article can be found in the online version of the journal.**

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Key words: Cardiomyopathies/diagnosis/ultrasonography; heart rupture; hematoma; interventricular septal rupture; myocardial infarction

Anahtar sözcükler: Kardiyomiyopatiler/tanı/ultrasonografi; kalp yırtığı; hematom; interventrül septal yırtık; miyokart enfarktüsü.