

BALIKESİR MEDICAL JOURNAL

Hit Two Birds With One Stone Via Thrombolytic Treatment

Trombolitik Tedavi ile Bir Taşla İki Kuş

Flora Ozkalayci¹, Aykun Hakgor², Süleyman Karakoyun³, Ali Karagoz², Ibrahim Halil Tanboga^{1,4,5},

- 1.Hisar Intercontinental Hospital, Department of Cardiology, Istanbul, TURKEY
- 2.Kosuyolu Heart Education and Research Hospital, Department of Cardiology, Istanbul, TURKEY
- 3.KafkasUniversity, Department of Cardiology, Istanbul, TURKEY
- 4.Nisantasi University, School of Health Science, Istanbul, TURKEY
- 5.Ataturk University, Department of Biostatistics, Erzurum, TURKEY

Öz

Son çalışmalar, sol ventrikül trombüsü (LVT) en sık akut anterior miyokard infarktüsü (AMI) sonrasında görülmektedir. AMI sonrası perkütan koroner girişim (PCI) uygulanan hastalarda LVT oluşumu sıklığına dair çeşitli çalışmalar mevcuttur Solheim ve ark. anterior AMI sonrası ilk 3 ay içinde LVT oluşum insidansını %15 olarak bildirmişlerdir. Yine bir meta-analizde LVT'nin özellikle anterior AMI'de görülen önemli bir komplikasyon olup, tedavi yönetimi konusu ilgi çekmektedir. Son zamanlarda klavuzların tavsiyesi doğrultusunda AMI ile gelen vakaların hızlı revaskülarizasyonu sonrasında sol ventrikül yeniden şekillenmesine etkili ilaçların, antikoagulan ve antiagregan kullanımının yaygınlaşması ile LVT görülme sıklığı giderek azalmakla birlikte, ACE kullanmakta olan grup ile kullanmayan grup arasında LVT oluşumu açısından fark bulunamamıştır. LVT oluşumu infarkt bölgesi, yaygınlığı ve anevrizma olup olmadığı ile ilişkili bulunmuştur. Bu olgu bildirisinde hastaneye nörolojik şikayetlerle başvuran sonrasında akut iskemik stroke tanısı almış, 20 gün öncesinde akut anterior AMI öyküsü olan ekokardiyografisinde sol ventrikül trombüsü saptanmış bir vaka anlatılmaktadır. Hastaya trombolitik tedavi uygulanmış olup tedaviden 7 gün sonrasında nörolojik fonksiyonlarının normale dönmesinin yanısıra LVT tamamen gerilemiştir.

Anahtar kelimeler: sol ventrikül trombüsü, apikal anevrizma, miyokard infarktüsü komplikasyonları

Abstract

Early data showed that in the setting of acute myocardial infarction (AMI), left ventricular thrombus (LVT) was present in most frequently in acute apical or anterior AMI. There are several studies on the frequency of LVT formation in patients treated with precutaneous coronary intervention (PCI). Solheim et al. reported LVT incidence of 15% in the first 3 months in AMI patients who were treated with primary PCI. In a meta-analysis it was shown that LVT is an important problem especially among patients with anterior AMI and management strategy is a point of interest. The incidence of LVT is in a decline recently. According to the current guidelines, immediate revascularisation of infarct related artery, use of sufficient anticoagulant therapy and agents that improve remodelling of the left ventricle was associated with decrease in incidence of LVT. Although the use of ACE-inhibitors had a favourable effect on left ventricle remodelling, there were no differences in LVT formation between those patients on ACE-inhibitor therapy and those who were not. LVT formation is associated with the infarct region, more frequent in anterior AMI, extent of infarct area and presence of aneurysm.

In this case report we present a patient applied to the hospital with neurologic symptoms and diagnosed with acute ischemic stroke possibly due to left ventricle thrombus, possibly developed after the anterior MI 20 days ago. By thrombolytic therapy cardiac thrombus was dissolved and after 7 days the patient had complete neurologic recovery.

Key words: Left ventricle thrombus, apical aneurism, complications of myocardial infarction,

Gönderilme Tarihi: 09-05-2019

Kabul Tarihi: 15-07-2019

Atf için: Flora Ozkalayci, Aykun Hakgor, Süleyman Karakoyun, Ali Karagoz, Ibrahim Halil Tanboga, Hit Two Birds With One Stone Via Thrombolytic Treatment, Balikesir Medical Journal, 2019 3(2):85-89

Sorumlu Yazar: Flora Özkalayci,
Hisar intercontinental hospital, Kardiyoloji bölümü, Ümraniye,
İstanbul, TURKEY.
Tel:+902165241300 , e-mail: florataniel@yahoo.com

DOI: 10.33716/bmedj.501588

Case report

62 years old male patient applied to emergency service with motor aphasia accompanied by left sided paresis appeared one hour ago. His computed tomographic (CT) and magnetic resonance imaging (MRI) findings were compatible with acute ischemic stroke. (figure1,2)

In his medical history the patient had anterior AMI 20 days ago and, was on double antiplatelet therapy after PCI. In his current admission, his ECG revealed sinus rhythm with lack of R wave progression in anterior derivations. His echocardiography revealed left ventricular aneurysm with an apical thrombus of 2x5cm in size (figure 3, 4). We concluded that the apical thrombus could have been assumed to be the source of emboli to cerebral arteries, thereafter we decided to administer thrombolytic therapy (55mg tissue plasminogen activator (t-PA) in 6 hours, following 5 mg IV bolus administration).

There was no thrombus detected at the echocardiographic assessment on the next day of thrombolytic therapy (figure 5). The paresis was completely recovered on the day of discharge.

Warfarin + clopidogrel were prescribed to the patient as anticoagulant and antiaggregant therapy.

Figure 1.



Figure 2.

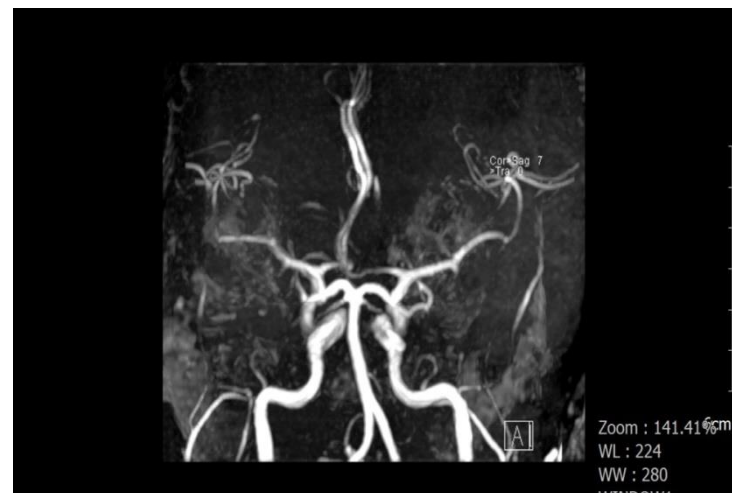


Figure 3.

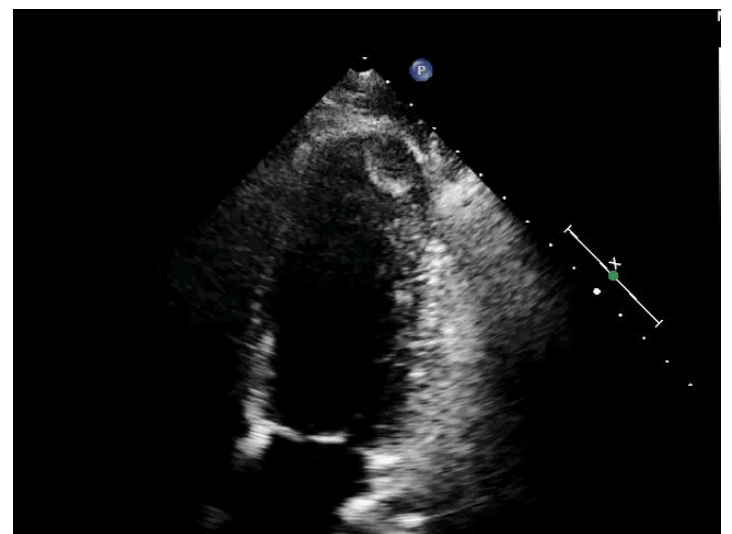
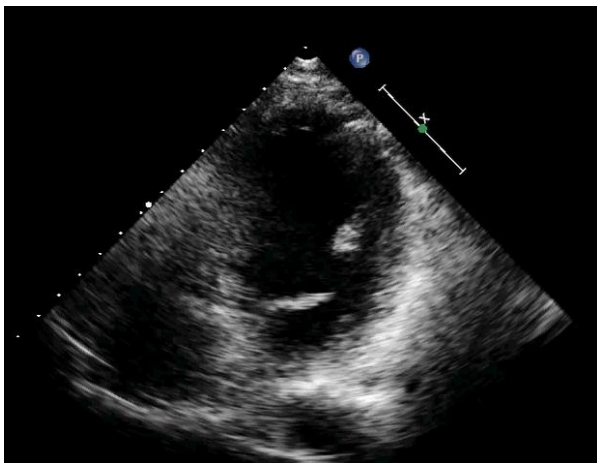


Figure 4.



Figure 5.



Discussion

Early data showed that in the setting of AMI, LVT was present in most frequently in acute apical or anterior AMI (1, 2). There are several studies on the frequency of LVT formation in patients treated with precutaneous coronary intervention PCI (3,4). Solheim S. *et al.* (3) reported LVT incidence of 15% in the first 3 months in AMI patients who were treated with primary PCI. In a meta-analysis it was shown that LVT is an important problem especially

among patients with anterior AMI and management strategy is a point of interest (4). The incidence of LVT is in a decline recently. According to the current guidelines, immediate revascularisation of infarct related artery, use of sufficient anticoagulant therapy and agents that improve remodelling of the left ventricle (5) was associated with decrease in incidence of LVT. Although the use of ACE-inhibitors had a favourable effect on left ventricle remodelling, there were no differences in LVT formation between those patients on ACE-inhibitor therapy and those who were not (5). LVT formation is associated with the infarct region, more frequent in anterior AMI, extent of infarct area and presence of aneurysm (1, 5, 6).

In the present report, our patient was admitted to hospital in the first 90 minutes of symptom onset of acute ischemic stroke. We concluded that the stroke was associated with the intracardiac thrombus. The patient was treated successfully with thrombolytic therapy for cerebrovascular event and was discharged with recovered neurologic functions. Besides cardiac left ventricular apical thrombus was totally regressed in the control echocardiography. According to 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke (7) IV alteplase indicated in those patients who had a history of recent STEMI involving LAD area in the past three months and presenting with acute ischemic stroke with class IIB, same guideline offers alteplase therapy for patients

presenting with moderate acute ischemic stroke with known intracardiac thrombus with class IIB indication (7).

As a consequence of the current guideline recommendation we have decided to treat the patient with thrombolytic therapy.

By the increased usage of ACE-inhibitors and dual antiplatelet therapy (DAPT), the incidence of LVT has decreased. There are not enough data in the management of patients with intracardiac thrombus concomitant with thromboembolic complications.

Conclusion

Our case was treated with t-PA primarily for acute cerebral thromboembolism (possible originating from LVT) and concomitantly LVT was regressed. In those patients with a large ischemic area may be followed up closely to diagnose possible intracardiac thrombus and intervene before it is too late for thromboembolic complications.

References

1-Asinger RW, Mikell FL, Elspeger J, Hodges M. Incidence of left-ventricular thrombosis after acute transmural myocardial infarction. Serial evaluation by two-dimensional echocardiography. *N Engl J Med* 1981; 305(6): 297–302.

2-Visser CA, Kan G, Lie KI, Durrer D. Left ventricular thrombus following acute myocardial infarction: a prospective serial echocardiographic study of 96 patients. *Eur Heart J* 1983;4(5): 333–7

At present, generally vitamin K antagonists are being administered for the treatment of LVT.

Considering DAPT is essential after MI, adding vitamin K antagonists to the therapy would increase the risk of bleeding in these patients. A recent clinical trial has shown that in patients taking oral anticoagulants in addition to DAPT, the risk of bleeding at 1 year is as high as 44% (8).

NOAC could be an alternative for warfarin with class IIB indication, according to the ESC guidelines for DAPT.

Echocardiographic assessment may be performed on the 15th and 30th day of event and if thrombus detected, should be treated with appropriate anticoagulant therapy. Data is lacking for management of these kind of patients. There are randomised controlled trials are needed to provide a consensus for such cases.

3- Solheim S, Seljeflot I, Lunde K, Bjørnerheim R, Aakhus S, Forfang K, Arnesen H. Frequency of left ventricular thrombus in patients with anterior wall acute myocardial infarction treated with percutaneous coronary intervention and dual antiplatelet therapy. *Am J Cardiol* 2010; 106(9): 1197–200.

4-Robinson AA, Jain A, Gentry M, Mc Namara RL. Left ventricular thrombi after STEMI in the primary PCI era: A systematic review and meta-analysis. *Int J Cardiol* 2016; 221: 554-9.

5- Chiarella F, Santoro E, Domenicucci S, Maggioni A, Vecchio C. Predischarge two-dimensional echocardiographic evaluation of left ventricular thrombosis after acute myocardial infarction in the GISSI-3 study. *Am J Cardiol* 1998; 81(7): 822–7.

6- Weinsaft JW, Kim HW, Crowley AL, Klem I, Shenoy C, Van Assche L, et al. LV thrombus detection by routine echocardiography: insights into performance characteristics using delayed enhancement CMR. *J Am Coll Cardiol* 2011; 4(7): 702–12.

7- Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K et al., 2018 guidelines for the early management of patients with acute ischemic stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke* 2018; 49: 46-99.

8-Dewilde WJ, Oirbans T, Verheugt FW, Kelder JC, De Smet BJ, Herrman JP et al., Use of clopidogrel with or without aspirin in patients taking oral anticoagulant therapy and undergoing percutaneous coronary intervention: an open-label, randomised, controlled trial. *Lancet* 2013; 381(9872): 1107-15.