Treatment of Left Atrial Disc Thrombus on a Figulla Atrial Septal Defect Occluder with Heparin

Figulla Atriyal Septal Defekt Oklüder üzerindeki Sol Atriyal Trombüsün Heparin ile Tedavisi

Figulla Oklüder Trombüsü / Figulla Occluder Thrombus

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Özet

Transkateter atriyal septal defekt kapatılması sonrasında akut cihaz trombozu son derece nadir ve önemli bir komplikasyondur. Bu olguda, perkütan transkateter kapatılma işlemine uygun, 13-mm sekundum tip atriyal septal defekti olan 30 yaşındaki bir erkek hastada işlemden hemen sonra cihazın sol atriyal diskinde 12 x 5 mm mobil kitle görüldü. Trombüs asetilsalisilik asit, klopidogrel ve heparin infüzyonu ile başarılı bir şekilde tedavi edildi.

Anahtar Kelimeler

Atrial Septal Defekt; Trombüs; Heparin

Abstract

Acute device thrombosis is extremely rare and important complication after transcatheter atrial septal defect closure. In this case we observed a 12 x 5 mm mobile mass image in the left atrial disc of device immediately after the procedure in a 30 year old man with a 13-mm secundum type atrial septal defect which was suitable for percutaneous transcatheter closure. The thrombus was successfully treated with acetylsalicylic acid, clopidogrel and an infusion of heparin.

Keywords

Heart Septal Defects, Atrial; Thrombosis; Heparin

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Introduction

Transcatheter closure of atrial septal defect (ASD) is increasingly common and become an alternative to surgical closure. Periprocedural thrombus formation on the device is a rare but important complication which can lead to systemic embolization [1]. We report a successful treatment of a case which have an acute thrombus formation on the left atrial disc of Figulla ASD occluder in a patient with antiplatelet and anticoagulant medication during the procedure.

Case Report

A 30-year-old man, with no cardiovascular risk factors, presented with chest pain. He was in sinus rhythm with right bundle branch block on electrocardiography. On transthorasic echocardiographic examination, ejection fraction of left ventricle (LV) was 60% and dilatation of right ventricule with a 40 mmHg of sistolic pulmonay artery pressure were observed. A transesophageal echocardiogram (TEE) demonstrated a 13-mm secundum type atrial septal defect with rims that were suitable for percutaneous transcatheter closure. Cardiac Cathetetrization revealed Qp/Qs: 2,1.

The Patient was referred for percutaneous closure and 100 mg acetylsalicylic acid initiated. At the beginning of the procedure, unfractionated heparin (UFH) was administered perioperatively 7000 IU (100 IU/kg) for anticoagulation. A 18-mm Figulla® ASD Occluder (Occlutech; Jena, Germany) device was implanted using a TEE-guided right femoral approach.

Immediately after the procedure a 12 x 5 mm mobile mass image resembling like a thrombus in the left atrial disc of device was revealed on TEE (Figure 1). Therefore, we administered an additional 5000 UI UFH. No periprocedural thromboembolic events occurred and treatment was continued with 100 mg acetylsalicylic acid, 75 mg clopidogrel, and an infusion of UFH (aPTT between 50-70 seconds) for two days. A follow-up TEE performed 48 hours after the procedure and no thrombus formation was observed on the device (Figure 2). TEE revealed correct positioning of the closure device and no signs of residual atrial shunt.

Moreover, no markers of hypercoagulable state were found positive such as protein C or protein S deficiency, anticardiolipin antibodies, factor V Leiden mutation. There was no neurological symptom observed during in hospital six days follow up. The patient was discharged from the hospital on double antiplatelet therapy with clopidogrel and aspirin. The further clinical course was uneventful.

Discussion

Transcatheter closure of ASD is proven to be safe and effective method, there may still be some complications related with this process. One of these complications is the development of device-related thrombus. The real incidence of thrombus formation is not known well and no randomised trials evaluating the independent predictors of device associated thrombi are existing [2].

Thrombus formation is often seen on the left atrial side of the device. The type of the device and amount of material in the left atrium are the most common risk factors for thrombus formation [3]. Patients who underwent transcatheter closure of ASD



Figure 1. Mass image in atrial disk of the device that corresponds to a thrombus.

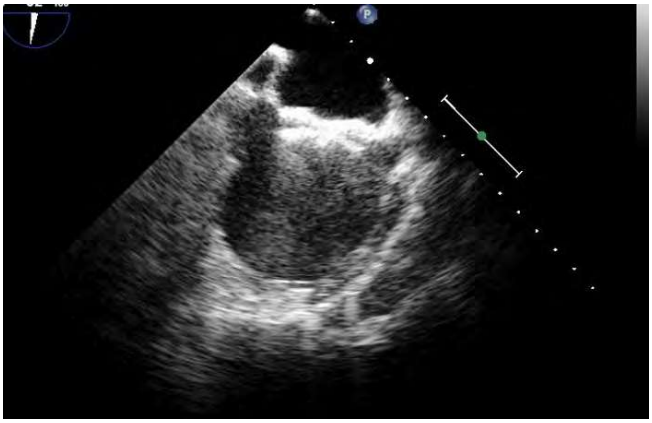


Figure 2. No image of thrombus with normal apposition of the device.

experienced a significant increase in the coagulation cascade, and thus post-procedure thrombin amount increases at device territory [4,5]. The Occlutech Figulla Occluder is a safe and efficient device that has been designed to close the whole range of defects for which percutaneous closure is indicated [3].

Early thrombus formation is extremely rare with the current combination of aspirin, clopidogrel, and heparin use during the procedure [6]. From over two hundred procedures perfomed in our center this is the first case of postprocedural thrombosis and successful treatment with heparin and disappearrance of thrombus observed.

The mobility and potential friability of acute thrombus in the setting of percutaneous atrial septal defect closure implies a high risk of embolization early after device closure and supports an aggressive approach to management [7]. For this reason, prevention of device associated early thrombus formation or else how treatment modalities should be done after occurrence needs attention.

Thrombus formation, despite the use of heparin during the procedure, is not a frequent occurrence. However, in our patient, immediately after the liberalization of the device thrombus occurred at left atrial disc of the device.

There is no consensus on the best management strategy in case of device thrombosis detected during transcatheter ASD closure and there is little information to guide correct management when thrombosis does occur [7]. Different treatment modalities used for treatment in cases of early postprocedure thrombus until now. Willcoxson et al. have tried heparin plus abciximab [7], Acar et al. [8] and Chessa et al. [1] used only

heparin, Vanderheyden et al. [9] have tried thrombolytic and glicoprotein 2b-3a inhibitor. All of these treatment had been proven to be successful.

In this case we observed disappereance of trombus not only with an 48 hours infusion of heparin, and possibly by physiological fibrinolysis without any sequelae in TEE after 2 days.

Conclusion

We want to emphasize the device-related early thrombosis despite anti platelet and anti coagulant therapy and the treatment strategy of combination with UFH also to avoid complications in patients with thrombi after ASD closure.

Competing interests

The authors declare that they have no competing interests.

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