Journal of MTU 2024;3(2):60-62
ISSN: 2822-4094

Olgu Sunumu / Case Report

Journal of Medical Topics & Updates (Journal of MTU)

Doi: 10.58651/jomtu.1451150

Thrombus entrapped in patent foramen ovale and its unique treatment with low molecular weighted heparin

Patent foramen ovale içerisine sıkışmış trombüs'ün düşük molekül ağırlıklı heparin ile tedavisi

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ABSTRACT

Patent foramen ovale (PFO) is a congenital heart defect that affects %25-30 population. PFO can be cathegorized as most common site for intra-cardiac shunting. But thrombus in PFO is extremely rare. There is no consensus of treatment of this situation. We present a case of thrombus in PFO which is standing in both sides of interatrial septum and unique treatment of this thrombus with low molecular weighted heparin.

Keywords: Patent foramen ovale, thrombus, low molecular weighted heparin

ÖZET

Patent foramen ovale (PFO), popülasyonun %25-30'unu etkileyen konjenital bir kalp defektidir. PFO, intrakardiyak şantın en sık görüldüğü yer olarak sınıflandırılabilir. Ancak PFO'da trombüs son derece nadirdir. Bu durumun tedavisi konusunda fikir birliği yoktur. Biz interatriyal septumun her iki yanında yer alan PFO'da trombüs gelişen bir olguyu ve bu trombüsün düşük molekül ağırlıklı heparin ile benzersiz tedavisini sunuyoruz.

Anahtar Kelimeler: Patent foramen ovale, trombüs, düşük molekül ağırlıklı heparin

Geliş Tarihi / Received: 11.03.2024, Kabul Tarihi / Accepted: 19.08.2024
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INTRODUCTION

Patent foramen ovale (PFO) is a congenital heart defect that affects %25-30 population in appointed an autopsy and comminuty-based transesophageal echo (TEE) study so that PFO can be cathegorized as most common site for intra-cardiac shunting. But thrombus in PFO is extremely rare. Rarity of this situation causes difficulties and controversies in treatment. Therapeutic options include surgical treatment with thrombectomy or medical treatment with heparin or thrombolysis.

We present a case of thrombus in PFO which is standing in both sides of interatrial septum and unique treatment of this thrombus with low molecular weighted heparin (LMWH).

CASE PRESENTATION

A 62 years old female patient was admitted to the clinic with dyspnea complaint. Her dyspnea exacerbate on exertion since one month. ECG was revealed sinus rhythm. Transtorasic echocardiographic examination was revealed as ejection fraction %63 (simpson method) and normal left ventricular systolic function, concentric hypertrophy of left ventricle and mobile, hyperechogenic, mass that suggestive of thrombus entrapped in interatrial septum.

Next procedure was bedside transesophageal echocardiography and revealed that motional, 40 mm diameter in vertically, 20 mm diameter in longitudinally mass is suggestive of thrombus that entrapped in interatrial septum through patent foramen ovale.

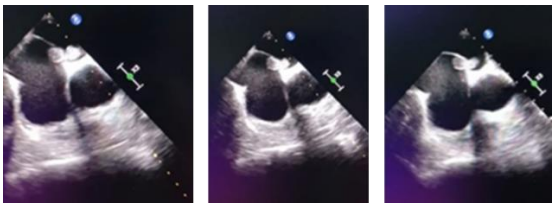

Figure 1. Midesophageal aortic valve short axis view

Patient is hospitalized and immediate treatment procedures has been established. Cardiac surgery, anticoagulation and thrombolysis all were considered and for the first step, cardiac surgery or thrombolysis is recommended but patient refuse both treatment.

Herein, we started LMWH accordance with the patient weight and e-GFR level. Additionally, antihypertensive treatment was regulated. Lower extremity venous doppler usg was also performed for further evaluation and there was no thrombus formation in the deep veins.

Because of history of nephrectomy and in the laboratory assessment creatinine level was 1.6 mg /dl and patient had no any signs or symptoms of pulmonary embolism so pulmonary ct angiography was not performed.

In the following up, arterial hypertension was controlled with carvedilol 12.5 mg bid orally, doksazosin 8 mg bid orally, amlodipin 10 mg sid orally.

Intravenous furosemide infusion was given to the patient who had high level of pro-bnp levels. Renal function test was performed daily.

In further evaluation effective diuresis and low pro-bnp levels acquired.

In the 72 hours of treatment of LMWH, control TEE was performed and thrombus which is entrapped in PFO was totally resoluted.

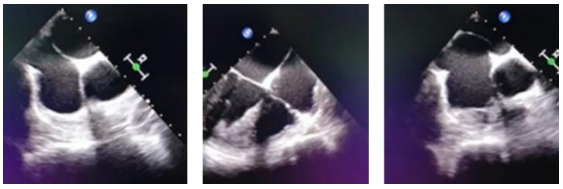

Figure 2. Midesophageal aortic valve short axis view and four chamber view

Patient anticoagulated with warfarin. When INR level reached 2, LMWH treatment stopped and effective anticoagulation has been achieved.

24 hours of rhythm monitorising was performed as well and paroxysmal atrial fibrillation was observed. Patient discharged on warfarin.

DISCUSSION

We present a rare case which is formation of thrombus in patent foramen ovale (PFO) and unique treatment approach. Albeit, consensus of opinion is not reached on treatment of entrapped thrombus in PFO, there are some alternatives as cardiac surgery, thrombolytics or anticoagulation.

In our study, we used LMWH for anticoagulative treatment.

Thrombus formation in PFO is extremely rare. The first case diagnosed by TOE was reported in 1985 by Nellessen et al. (1985).

In a study by Seo et al. (2017) is the largest systematic review showed that surgical treatment is associated with lower 60-day mortality and post-treatment embolic events. Among all patients, 112 (57.7%) were treated with surgery, 28 with thrombolysis, and 54 with anticoagulation alone.

In a other study Myers et al. (2010) reported that surgical treatment showed a non-significant trend toward improving survival and also reported that thrombolysis had a non significant opposite effect when compared with anticoagulation therapy for the treatment of trapped thrombus in a PFO.

In study of Fauveau et al. (2008) 84 patients with a trapped thrombus in a PFO were investigated. Of these 84 patients, 55 were treated surgically, 21 were treated with heparin, and 11 were treated with thrombolytic therapy. The mortality rates for the treatments were 13%, 14%, and 36%, respectively.

In conclusion, there is no clear final decision on treatment of thrombus entrapped in PFO besides that anticoagulant treatment appears to be an acceptable therapeutic alternative to surgery, thrombolytic.

Anticoagulation treatment is generally made with UFH in the literature. But in our study; we used LMWH for anticoagulation treatment and thrombus totally resoluted and post-anticoagulative embolic events were not observed and also diffusion-weighted MR imaging of the brain was normal.

In our opinion, this is the first case report in literature among patient with thrombus in PFO treated only with LMWH.

There is no randomized controlled trial for those patient's treatment because difficult to perform. When randomized controlled trial is possible to achieve, treatment with LMWH may be considered.

Acknowledgement

Financial Resource/ Sponsor's Role: There is not any financial support obtained from any source for his study

Conflict of Interest: No conflict of interest was declared by the authors.

Author Contributions:

Idea/Concept: Furkan AY, Hasan Ata BOLAYIR; **Design:** Furkan AY, Hasan Ata BOLAYIR; **Supervision/Consulting:** Furkan AY, Hasan Ata BOLAYIR; **Data Collection and/or Processing:** Furkan AY, Hasan Ata BOLAYIR; **Analysis and/or Interpretation:** Furkan AY, Hasan Ata BOLAYIR; **Literature Review:** Furkan AY, Hasan Ata BOLAYIR; **Writing of the Article:** Furkan AY, Hasan Ata BOLAYIR; **Critical Review:** Furkan AY, Hasan Ata BOLAYIR; **Resources and Funding:** Furkan AY, Hasan Ata BOLAYIR, Yusuf Ozan CENGİZ, İbrahim GÜNEY, Caner KILIÇ, Ertan BENZER, Büşra KUTLU.

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