Unusual evolution of bulb-shaped echoluscent-structured nonobstructive prosthetic valve thrombosis under thrombolytic therapy

To the Editor,

We have read with great interest the case report entitled 'A case of unusual looking prosthetic mitral valve thrombosis treated with low dose slow infusion tPA' published in May issue The Anatolian Journal of Cardiology 2014; 14: 297-9. (1). The authors presented an unusual form of prosthetic valve thrombosis (PVT) which was successfully lyzed by low dose slow infusion of tPA.

PVT is one of the major causes of primary valve failure. Presence of inadequate anticoagulation, drug interaction, the early postoperative period, atrial fibrillation, left atrial enlargement, multiple valve replacement, ventricular dysfunction, and pregnancy have been suggested to promote PVT (2, 3). Treatment modalities include heparin treatment, thrombolytic therapy (TT) and surgery. Guidelines lack definitive class I recommendations, have essential controversies, and usually leave the choice of treatment to the clinician's experience. TT as a first line strategy has been recently used with successful outcomes (2-4).

Although accelerated protocols seem attractive, they increase the risk of serious thromboembolism and bleeding events. Therefore alternative TT regimens have been the focus of research in recent studies. One of these published studies was the TROIA trial (3), which included the largest cohort of PVT patients published to date and compared different TT regimens. Low dose (25 mg) and slow (6 hours) infusion of t-PA without bolus with repetition as needed as a first line therapy was found to be the safest regimen with no loss of effectiveness compared with higher doses or rapid infusions of SKZ or t-PA. Although this is a nonrandomized, prospective observational study it is highly remarkable for its size and consistent treatment protocol in a single center. This study is not a head to head comparison of TT to surgery or any other TT regimen for the treatment of PVT, but still has the power to change the current guidelines and recommendations.

In current paper, Bayar et al. (1) described an interesting bulb-shaped mass which can be described as *'metamorphic thrombus formation'*. This echolucent mass was an unusual form of thrombus with different clot layers, indicating lower thrombus age. The fresh nature of the thrombus resulted in a successful outcome with a single dose of 25 mg tPA which was administered in 12 hours. Transesophageal echocardiography may permit visualization of this kind of thrombus organization, helping clinician in deciding treatment modality. A fresh thrombus may easily respond to TT whereas organized thrombus may result in unsuccessful outcome. As recently reported, lower thrombus age may contribute to a successful outcome (2).

As a result, we believe that the present report is useful for clinicians for recognition and management of this kind of unusual thrombus formation. We can conclude that echolucent nature of thrombus may indicate lower age of thrombotic mass and may contribute to higher TT success. TT should be considered as an initial treatment modality in PVT patients. Low dose and prolonged infusion of tPA is an effective regimen which can be safely performed in the absence of contraindications.

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Author`s Reply

To the Editor,

As we indicated in our article, there is no consensus about the treatment of patients with PVT in the guidelines. Guidelines recommend that taken into consideration of thrombus size, location and the patient's clinical status before receiving medical or surgical treatment decision (1). But there is no recommendation about the age of thrombus. In addition, there are no clear recommendations about dose and duration of treatment for patients who undergoing thrombolytic therapy. TROIA study made by Özkan et al. (2) although not a randomized study, has provided important data for patients undergoing thrombolytic therapy. This study shows that low-dose and long-term (25 mg/6 hour) tPA infusion is a safe and effective treatment option.

We thought that image which on the patient's prosthetic mitral valve was compatible with a very fresh thrombus. 25 mg/12 hour tPA was performed and we have reached a successful result. However, this treatment was administered only one patient and, large-scale studies are required to be a standard recommendation. We think that it is important to have lower age of thrombus in the success of the treatment.

As mentioned in the letter, this case is thought to be important that take into consideration of age of the thrombus as well as the size of the thrombus when deciding to dose and duration of thrombolytic therapy in patients with PVT. As in our case, the presence of the fresh thrombus image may provide a better response to low dose and slow infusion TT.

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Fibrinolytic therapy in prosthetic valve thrombosis

To the Editor,

We have read with great interest the report published by Bayar et al. (1) published in May issue The Anatolian Journal of Cardiology 2014; 14: 297-9., about a woman with diagnosis of prosthetic valve thrombosis (PVT) no obstructive in mitral position, treated successfully with a slow infusion and low dose of tissular plasminogen activator (tPA).

We would like to make some considerations about it.

First we will remain highlighting the importance of treatment and following the anticoagulation in patients with prosthetic heart valve.

As well the author indicates the most frequent cause of PVT is the inadequate anticoagulation, it is essential to take into account all the aspects related with this treatment, fundamentally the pharmacologic interactions that interfere achieving an international normalized ratio (INR) in therapeutic values. The most probable cause of PVT in this case.

The authors affirm that the patient was discharged after a successful thrombolytic therapy with an antiaggregant therapy re-regulated. In this patient is recommended the indication of antagonists of the vitamin K and aspirin to reach an INR goal of 4 (range of 3.5 to 4.5) (2).

In this patient the choice of thrombolytic therapeutic was accurate and successful.

The initial therapeutic decision is difficult and controversial. Clinical practice guidelines express no uniform opinions (3). The European Society of Cardiology proposed surgery as the initial treatment, regardless of clinical status and the size of the thrombus. The Society of Heart Valve Disease recommends that the first choice be thrombolysis in all cases of PVT, unless such treatment is contraindicated.

The American College of Chest Physicians recommends that the main criterion in the therapeutic decision be the size of thrombus, indicating thrombolysis as the treatment choice if the thrombus has an area of 0.8 cm^2 and surgery in older thrombi. The American Heart Association and American College of Cardiology in the last guidelines published reserve only fibrinolytic therapy for patients with a thrombosed left-sided prosthetic heart valve, recent onset (<14 days) of NYHA class I to II symptoms, and a small thrombus <0.8 cm^2 (Class IIa, Level of Evidence B) (2).

Even with the recommendations of the clinical practice guidelines it is very important to take into account the preference of the patient and the availability of emergency surgery.

In TROIA study, Özkan et al. (4) indicates similar rates of efficacy among the different schemes of thrombolytic treatment utilized. However, is attributed more safety to the scheme of treatment with tPA used by Bayar et al. (1).

Although a higher embolic complication rate has been reported for rtPA, which seems to be related to the higher infusion velocity, rather than with the type of thrombolytic agent (5).

Probably, the efficacy and safety of thrombolytic therapy in the PVT have greater relationship with the precocious diagnosis and the beginning fast treatment with the therapeutic scheme used.

We continued used intravenous recombinant streptokinase (250.000 IU/30 min and continuous infusion at 100.000 IU/hour, up to 72 hours). This approach also appears to be the most widely used and recommended protocol, and our outcomes are with acceptable efficacy rate and a good safety.

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Author`s Reply

To the Editor,

In current guidelines, target INR value is 3.0 for patients who underwent mechanical mitral valve replacement as is known. However, AHA/ACC Valvular Heart Disease guideline that published in March 2014