How can we reduce complications associated with thrombolysis for prosthetic valve thrombosis?

To the Editor,

We would like to comment on the recent article entitled “Stuck aortic valve treated by reteplase in a Bentall patient.” published in Anatol J Cardiol 2015; 15: 339-40 by Tanyeli et al. (1), in which the use of reteplase in a patient with a stuck aortic mechanical valve is reported. We believe there are some major drawbacks to be addressed regarding the diagnostic algorithm and the treatment of choice.

Although guidelines have recommended surgery for PVT (2), we recently reported that low dose (25 mg) and slow infusion (6 h) of recombinant tissue plasminogen activator (t-PA) are very safe and are associated with a very high success in this regard (3, 4). In this study, repeated low-doses and slow infusions of alteplase regimen under the guidance of serial transesophageal echocardiography (TEE) was superior to faster infusion thrombolysis therapy (TT) protocols. In the current report, a patient with aortic PVT was administered double-bolus reteplase, which may be a very rapid TT regimen that may have resulted in a major embolism and/or hemorrhage. Thromboembolism due to rapid TT of PVT is well-recognized, and we respectfully suggest that clinicians should avoid the routine use of such a regimen. Rapid thrombolysis should only be reserved for certain circumstances, including critically ill patients with PVT or those with stroke (5) or acute myocardial infarction. Furthermore, the authors state that they pre-treated the patient with unfractionated heparin (UFH) and acetylsalicylic acid immediately before the first dose of reteplase and that it was continued thereafter. We reported that the safety of thrombolysis is related to prolonged infusion of t-PA without bolus and without concomitant UFH infusion (3, 4). We feel that the rapid infusion of t-PA with bolus dose and concomitant UFH jeopardizes PVT patients who may suffer risks of hazardous consequences (death, embolism, hemorrhage).

TEE should play a central role in every step of the management of patients with PVT, including the initial diagnosis, guiding the therapy, and evaluating the outcome. However, in the current report, the authors used only transthoracic echocardiography for the clinical decision-making of the patient with obstructed aortic PVT, which may be misleading. Fluoroscopy is frequently used to assess the leaflet motion in patients with PVT. However, the detection of the cause of leaflet blockage is not detectable during the catheterization study. Interestingly, the authors stated that they detected a huge thrombus burden resulting in severe aortic stenosis in the catheterization laboratory. The use of TEE is indispensable for the quantitative visualization of thrombus. On the other hand, the evaluation of the severity of obstruction in patients with aortic PVT should almost always include quantitative data beyond the maximum gradient, including the effective orifice area, dimensionless valve index, acceleration time, and acceleration/ejection time.

We believe that the management of patients with PVT should be evidence based, and current evidence strongly suggests the use of low-dose and slow infusion of TT protocols without bolus and without concomitant anticoagulant therapy in patients with PVT. Furthermore, heparin should be continued with warfarin until INR reaches a level of 2.5, rather than only 48 h after successful TT.

While this case is interesting, a good outcome in a single patient certainly does not prove that the approach used is broadly applicable.

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References

1. Tanyeli Ö, Dereli Y, Düzenli MA, Gümüş N. Stuck aortic valve treated by reteplase in a Bentall patient. Anatol J Cardiol 2015; 15: 339-40. [CrossRef]
2. Nishimura RA, Otto CM, Bonow RO, Carabello BA, Erwin JP 3rd, Guyton RA, et al; ACC/AHA Task Force Members. 2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation 2014; 129: e521-43. [CrossRef]
3. Özkan M, Gürsoy OM, Atasoy B, Uslu Z. Management of acute ischemic stroke occurred during thrombolytic treatment of a patient with prosthetic mitral valve thrombosis: continuing thrombolysis on top of thrombolysis. Anatol J Cardiol 2012; 12: 889-90.
4. Özkan M, Çakal B, Karakoyun S, Gürsoy OM, Çevik C, Kalçık M, et al. Thrombolytic therapy for the treatment of prosthetic heart valve thrombosis in pregnancy with low-dose, slow infusion of tissue-type plasminogen activator. Circulation 2013; 128: 532-40. [CrossRef]
5. Özkan M, Gündüz S, Biteker M, Astarcioğlu MA, Çevik C, Kaynak E, et al. Comparison of different TEE-guided thrombolytic regimens for prosthetic valve thrombosis: the TROIA trial. JACC Cardiovasc Imaging 2013; 6: 206-16. [CrossRef]

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