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LETTER TO THE EDITOR

Management of prosthetic valve thrombosis in pregnancy



Tratamento da trombose da válvula protética na gravidez

Dear Editor,

We read with great interest the article by Cardoso et al. which was recently published in the *Journal*.¹ We thank the authors for the contribution of their report describing thrombolytic therapy (TT) with streptokinase (SK) in a pregnant patient with prosthetic valve thrombosis (PVT). At the same time, we want to make some important points regarding major issues with patient management and TT regimens for PVT in pregnancy.

Pregnancy is a highly thrombogenic state which poses an increased risk of thrombosis in women with mechanical prosthetic valves. PVT in pregnancy is potentially life-threatening for both mother and fetus and management strategies are the subject of debate. Common available treatment modalities for this serious complication include optimized anticoagulation, TT²⁻⁵ and surgery,⁶ each with its pros and cons.

Surgery is suggested as a first-line strategy in most cases with left-sided PVT; however, TT has recently been used with successful outcomes.²⁻⁵ We have recently reported that low dose (25 mg) and slow infusion (six hours) of tissue-type plasminogen activator (t-PA) is the safest TT regimen for PVT without compromising effectiveness as compared with higher doses and rapid infusions of SK or tPA.³ The TROIA trial showed that tPA was superior to SK in terms of success and complication rates, and accelerated TT regimens (either tPA or SK) were associated with higher mortality and complication rates. However, due to the higher costs of tPA treatment, SK is still widely used for TT in developing countries.

Although no evidence-based guidelines for pregnant patients complicated with PVT are currently available, recommendations for this complication are similar to those for the management of PVT in non-pregnant patients; definitive class I recommendations are lacking due to the absence of randomized controlled trials. We have previously reported that low dose (25 mg) and slow infusion (six hours) of t-PA without bolus under the guidance of serial transesophageal echocardiography (TEE) is very safe and associated with very

high thrombolytic success in pregnant patients with PVT.⁴ In this single-center prospective study including a relatively large number of pregnant patients with PVT, this strategy was associated with successful thrombolysis in all patients, with lower maternal and fetal adverse events compared with surgery or anticoagulation based on the available published data.

The lack of TEE guidance during TT is another drawback of the current report. Although transthoracic echocardiography (TTE) is an essential part of the diagnostic assessment of a patient with PVT, its value is usually limited because of a certain degree of acoustic shadowing and characteristic reverberations caused by the prosthetic material itself. On the other hand TEE, with its high resolution, has indispensable value to assess thrombus size, mobility and location, which may help in decision-making regarding thrombolysis, anticoagulation and surgery.^{7,8} Moreover, TEE provides direct imaging of thrombus in the left atrium or the left atrial appendage, which usually cannot be detected with TTE. The presence of a left atrial thrombus is accepted as a contraindication for thrombolysis and should be ruled out by TEE before TT. Finally, the reduction of thrombus burden and need for additional TT sessions can be evaluated only by TEE. A non-obstructive residual thrombus after the first TT session cannot be diagnosed without TEE.

As a result, we can conclude that TT with low-dose (25 mg) slow infusion (six hours) of tPA should be considered as the first-line therapy for pregnant PVT patients unless contraindicated, since cardiac surgery exposes mother and the fetus to a greater risk than does TT.⁹ Serial TEE guidance should complement TTE in every step of the management algorithm in patients undergoing TT for PVT.

Conflicts of interest

The authors have no conflicts of interest to declare.

References

- Cardoso G, Aguiar C, Andrade MJ, et al. Prosthetic mitral valve thrombosis in pregnancy: from thrombolysis to anticoagulation. *Rev Port Cardiol*. 2015;34:71.e1-5.
- Özkan M, Kaymaz C, Kirma C, et al. Intravenous thrombolytic treatment of mechanical prosthetic valve thrombosis: a study using serial transesophageal echocardiography. *J Am Coll Cardiol*. 2000;35:1881-9.

3. Özkan M, Gunduz S, Biteker M, et al. Comparison of different TEE-guided thrombolytic regimens for prosthetic valve thrombosis: the TROIA trial. *JACC Cardiovasc Imaging*. 2013;6:206–16.
4. Özkan M, Cakal B, Karakoyun S, 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.
5. Kalçık M, Gürsoy MO, Karakoyun S, et al. Thrombus attached to suture materials successfully thrombolysed with low-dose tissue plasminogen activator. *Türk Kardiyol Dern Ars*. 2014;42:61–3.
6. Castilho FM, De Sousa MR, Mendonça AL, et al. Thrombolytic therapy or surgery for valve prosthesis thrombosis: systematic review and meta-analysis. *J Thromb Haemost*. 2014;12:1218–28.
7. Gürsoy MO, Karakoyun S, Kalçık M, et al. The incremental value of RT-3 D TEE in the evaluation of prosthetic mitral valve ring thrombosis complicated with thromboembolism. *Echocardiography*. 2013;30:E198–201.
8. Ozkan M, Gursoy OM, Astarçıolu MA, et al. Real-time three-dimensional transesophageal echocardiography in the assessment of mechanical prosthetic mitral valve ring thrombosis. *Am J Cardiol*. 2013;112:977.
9. Weiss BM, von Segesser LK, Alon E, et al. Outcome of cardiovascular surgery and pregnancy: a systematic review of the period 1984–1996. *Am J Obstet Gynecol*. 1998;179:1643–53.

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