Intracardiac thrombosis after liver transplantation: Can be detected before surgery?

Sir,

Intracardiac thrombus (ICT) is a multifactorial condition that can occur after major vascular surgeries.\(^1\) ICT is uncommon after liver transplantation (LT), and mortality is high.\(^2\) Activation of coagulation system, stasis-induced inferior vena cava and portal vein clamping, massive blood transfusion, and venovenous bypass predispose to thrombus formation after reperfusion.\(^1\) In the current study, we present a patient who underwent cardiac surgery because of right atrium thrombus after LT.

A 49-year-old, 65 kg female patient admitted to our hospital with dyspnea, which was received a live donor. A thrombus was detected in the right atrium, right main pulmonary artery, left main pulmonary artery bifurcation, and the distal of vena cava inferior starting from the main iliac vein which was allowing to flow in chest computed tomography [Figure 1a]. Transthoracic echocardiography after LT that is done 6 months ago was normal. The patient was taken to the operating room. Anesthesia induction was included. Cardiopulmonary bypass time was 135 min and thrombus in size 2 cm × 1.5 cm was removed [Figure 1b]. No complications were observed during the operation. The patient was taken to the intensive care unit and died due to deterioration of overall situation 4 days later.

Anesthetic management of a patient who has ICT during or after LT is extremely important. ICT can lead to many complications that can cause to intraoperative death. Peiris et al.\(^2\) have reported that venous thrombosis, atrial fibrillation, and transjugular intrahepatic portosystemic shunt for portal hypertension (TIPS) are responsible for ICT
Letters to Editor

Figure 1: (a) Computed tomography image of intracardiac thrombus in the right atrium (white narrow), (b) the removed thrombus during LT. Many studies revealed that atrial fibrillation and development of TIPS are risk factors for ICT.[3]

There is not an accepted standard method of hemodynamic monitoring in this patient. Systemic arterial pressure, central venous pressure, pulmonary artery catheterization (PAC), and TEE are the parts of hemodynamic monitorization.[4] PAC can be helpful during monitoring of hemodynamic changes, but Gwak et al.[5] reported that incidence of arrhythmia was 70% during PAC, 37% of those were benign, and 33% were severe arrhythmia. The catheter slides can be passed without touching the thrombus during PAC or having more thrombus moved can cause death. TEE is now accepted as a gold standard noninvasive method according to PAC. Anesthetists must be careful about hemodynamic parameter changes due to the localization of thrombus and position changes. TEE also provides very valuable information about evaluating the thrombus formation, extent and response to treatment at real time evaluation.[2] Mutlak et al.[4] reported a liver transplant case that had to be canceled due to ICT detected by TEE immediately after induction of anesthesia. Anesthetists should be more careful for cardiac surgery of cardiac thrombus during or after LT.

In this case report, development of ICT after LT was highlighted. We believe that control echocardiography before surgery in liver-transplanted patients can be useful. Although the formation of ICT is rare after LT, anesthetists should be careful in anesthetic management because of high mortality and preoperative examination should be done in detail.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

Ahmet Selim Ozkan, Osman Kacmaz, Sedat Akbas, Mahmut Sahin, Mahmut Durmus
Departments of Anesthesiology and Reanimation and 1Radiology, School of Medicine, Inonu University, Malatya, Turkey

Address for correspondence:
Dr. Ahmet Selim Ozkan,
Department of Anesthesiology and Reanimation, School of Medicine, Inonu University, Malatya, Turkey.
E-mail: asozkan61@yahoo.com

References
1. Gologorsky E, De Wolf AM, Scott V, Aggarwal S, Dishart M, Kang Y. Intracardiac thrombus formation and pulmonary thromboembolism immediately after graft reperfusion in 7 patients undergoing liver transplantation. Liver Transpl 2001;7:783-9.
2. Peiris P, Pai SL, Aniskevich S 3rd, Crawford CC, Torp KD, Ladlie BL, et al. Intracardiac thrombosis during liver transplant: A 17-year single-institution study. Liver Transpl 2015;21:1280-5.
3. Xia VW, Ho JK, Nourmand H, Wray C, Busuttil RW, Steadman RH. Incidental intracardiac thromboemboli during liver transplantation: Incidence, risk factors, and management. Liver Transpl 2010;16:1421-7.
4. Mutlak H, Wilke HJ, Moench C, Bechstein WO, Lotz G, Zacharowski K, et al. Early echocardiographic detection of a massive intracardiac thrombus in a patient scheduled for orthotopic liver transplantation. J Clin Anesth 2012;24:404-6.
5. Gwak MS, Kim JA, Kim GS, Choi SJ, Ahn H, Lee JJ, et al. Incidence of severe ventricular arrhythmias during pulmonary artery catheterization in liver allograft recipients. Liver Transpl 2007;13:1451-4.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Access this article online

Website: www.saudija.org

DOI: 10.4103/1658-354X.203056

How to cite this article: Ozkan AS, Kacmaz O, Akbas S, Sahin M, Durmus M. Intracardiac thrombosis after liver transplantation: Can be detected before surgery?. Saudi J Anaesth 2017;11:255-6.