

Transesophageal Echocardiography: How Safe Is It?

Márcia de Melo Barbosa

Ecoenter- Hospital Socor, Belo Horizonte, MG - Brazil

Transesophageal echocardiography (TEE) is an essential diagnostic tool, broadly used in cardiology. It is considered a semi-invasive, but safe, procedure, although objective data on the events that occur during or after the procedure are scarce. The study by Cury et al¹, about the safety of TEE, published in this issue of the *Arquivos Brasileiros de Cardiologia* (The Brazilian Archives of Cardiology), reports the experience of a single center regarding the complications of TEE in 137 patients. These were more related to sedation with Midazolam > 5 mg, presence of cardiomyopathy and presence of significant mitral regurgitation.

Pioneer studies have shown that the rate of severe events that occurred as TEE complications ranged from 0.18 to 0.5%^{2,3}. However, most of the 10,419 patients included in the study by Daniel et al² was awake, and thus, the possible complications of sedation were underestimated². Even when the TEE is carried out in patients hemodynamically unstable, the test is quite safe, as demonstrated by Sohn et al., who did not observe any significant complications during TEE performed in 124 critically ill patients⁴.

Ideally, the hemodynamic parameters must be monitored during the TEE, as carried out by Cury et al¹, who monitored the blood pressure and oxymetry. A previous study that monitored the blood pressure in 54 non-sedated patients, showed an increase in the blood pressure in 77% of the cases and a decrease in 22%. One patient developed an intermittent second-degree AV block, which, however, disappeared after the TEE. There was no arrhythmia onset or increase with the test⁵. The study by Cury et al¹ did not show the presence of arrhythmias, either. The authors did not mention the occurrence of bleeding and trauma, although they are the most frequent complications in the literature. A study carried out in 10,000 patients showed a rate of hypopharynx, esophageal or gastric perforation of 0.03%. The authors concluded that dyspnea, coughing, odynophagia and hemoptysis symptoms after a TEE suggest the diagnosis of perforation and must be rapidly investigated⁶.

Although the study by Cury et al¹ does not mention the use of anticoagulants, the literature suggests that the TEE is safe

in patients using them. However, there has been a report of a case of esophageal hemorrhage in a patient that received thrombolytic therapy for the treatment of prosthesis thrombosis diagnosed by the TEE, suggesting that the thrombolytic therapy immediately after the TEE can be associated to a higher risk of bleeding².

The risk of bacteremia with TEE is small^{7,8} and the Guidelines for Endocarditis Prophylaxis of the American Heart Association do not recommend antibiotic prophylaxis for endocarditis in patients submitted to TEE⁹. Very few deaths have been described in the literature².

Intraoperative TEE

Although the study by Cury et al¹ did not include intraoperative TEE, studies that analyze the complications of intraoperative TEE are important because they reflect the consequences of the presence of the transesophageal probe for a longer period of time. A study with 155 academic institutions in the USA showed that 91% routinely perform intraoperative TEE¹⁰, showing its large scope. In a study of 7,200 patients submitted to intraoperative TEE, the morbidity and the mortality of the procedure were 0.2% and 0%, respectively. These data are comparable to the rates of endoscopy complications¹¹.

The injury mechanism with the TEE transducer in cardiac surgery can be multifactorial: effects of local pressure, vascular failure, local thermal tissue injury impaired blood supply to the mucosa by cardiopulmonary bypass surgery, among others¹².

Lennon et al¹² analyzed the late gastrointestinal complications (24 hrs after the intraoperative TEE) and that can be the cause of a higher incidence of these complications in their study, as other authors did not analyze late complications of intraoperative TEE. Although it is a retrospective study, the authors emphasize the possibility of these late events and suggest that the post-TEE endoscopy is carried out with a low degree of suspicion¹². The study by Cury et al¹ did not assess the occurrence of late complications and, therefore, the rate of events related to TEE can be in fact underestimated.

In conclusion, TEE has currently an important impact in the diagnosis and management of several cardiac diseases. Although it is a semi-invasive test, previous and recent studies show a low rate of complications. That, however, does not mean that the contraindications should not be respected and that the risk-benefit should not be evaluated individually. The study by Cury et al¹ has demonstrated the safety of this method in our country, even in sedated patients and in patients with systolic dysfunction.

Key words

Echocardiography, transesophageal / complications; safety

Mailing address: Márcia de Melo Barbosa •
Al Conde do Rio Pardo, 288, Vila do Conde, 34.000-000,
Nova Lima, MG - Brazil
E-mail: marciambarbosa@terra.com.br, mmbarbosa@cardiol.br

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