THE ROLE OF TRANSOESOPHAGEAL ECHOCARDIOGRAPHY IN THE DIAGNOSIS AND MANAGEMENT OF CRITICALLY ILL PATIENTS IN THE INTENSIVE CARE UNIT

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***Aim:** Transesophageal echocardiogram is an alternative method to transthoracic echocardiogram. The advantage of this technique over transthoracic echocardiogram is usually clearer images, especially of structures that are difficult to view transthoracicly. In this study, we examined the role of transoesophageal echocardiography in the diagnosis and management of critically ill patients in the intensive care unit.*

***Methods:** The study was performed on 20 consecutive critically ill intensive care unit patients (12 men and 8 women; mean age 47.1±2.5 years) in whom transthoracic echocardiography was inadequate. Before inserting the probe, mild to moderate sedation was made with iv midazolam to the patients.*

***Results:** At the time of transesophageal echocardiography, 4 patients (%20) with prosthetic valve were being mechanically ventilated. Transesophageal echocardiography was performed without significant complications in all patients. The most frequent indications, in 13 (%65) patients, was prosthetic valvular thrombus including 10 patients with mitral and 3 patients with aortic prosthetic valve, in 5 (%25) patients was infective endocarditis, and in 2 (%10) patients was aortic dissection.*

***Conclusions:** Transesophageal echocardiography can be safely performed and has an important role in the diagnosis and management options of critically ill patients in the intensive care unit.*

***Key words:** Transoesophageal echocardiography, critically ill patients, intensive care unit*

INTRODUCTION

Transesophageal echocardiogram is an alternative and sometimes excellent method to transthoracic echocardiogram. The advantage of this technique over transthoracic echocardiogram is usually clearer images, especially of structures such as prosthetic heart valves and atrial septum that are difficult to view transthoracicly (1-3). The use of the transoesophageal echocardiography in the hemodynamically unstable patient admitted to the intensive care unit is very important for the diagnosis and treatment (1-3). In this study, we examined the role of transoesophageal echocardiography in the diagnosis and management of critically ill patients in the intensive care unit.

METHOD

The study was performed on 20 consecutive critically ill intensive care unit patients (12 men and 8 women; mean age 47,1±2,5 years) in whom transthoracic echocardiography was inadequate. We used a Vivid 3 cardiovascular ultrasound system (GE). The indication for the echocardiogram was recorded as either assessment of left ventricular function, hypotension, evaluation for suspected infective endocarditis, mitral and aortic prosthetic valvular thrombus (Figure 1a, 1b), aortic dissection, and assessment of right ventricular function. Any change in patient management that occurred as a result of the study was recorded. Before inserting the probe, mild to moderate sedation was made with intravenous midazolam to the patients. The investigation conforms with the principles outlined in the Decleration of Helsinki.

STATISTICAL ANALYSIS

Statistics were obtained using the ready-to-use programme of SPSS version 8.0. Data are expressed as percentages for categorical variables. p value <0.05 was considered to indicate statistical significance.

RESULTS

At the time of transesophageal echocardiography, 4 patients (%20) with prosthetic valve were being mechanically ventilated. Transesophageal echocardiography was performed without significant complications in all patients. The most frequent indications, in 13 (%65) patients, was prosthetic valvular thrombus including 10 patients with mitral and 3 patients with aortic prosthetic valve, in 5 (%25) patients was infective endocarditis, and in 2 (%10) patients was aortic dissection. After transesophageal echocardiography, 8 (40%) patients had their management changed including changes in inotropic support such as dopamine, dobutamine, norepinephrine infusion, drug therapy such as tissue plasminogen activator and/or heparin infusion, fluid management, and additional procedures on the intensive care unit.

DISCUSSION

We found that transesophageal echocardiography can be safely performed and has an important role in the diagnosis and management options of critically ill patients in the intensive care unit. Transesophageal echocardiography has been favoured over transthoracic echocardiography in critically ill patients in the intensive care unit largely because of the challenges of obtaining images especially prosthetic aortic valves (4,5). In patients with mechanic ventilation, as in our 4 prosthetic valve patients, lung inflation and positive end-expiratory pressure interfere with transthoracic echocardiography imaging, leading to reduced therapeutic impact when compared with transesophageal echocardiography (4). We were able to obtain adequate images with transesophageal echocardiography in around 100% of all intensive care patients. In this study, a significant change in management including changes in inotropic support such as dopamine, dobutamine, norepinephrine infusion, drug therapy such as tissue plasminogen activator and/or heparin infusion, fluid management such as glucose or isotonic NaCl infusion, and additional procedures resulted after transesophageal echocardiography in 8 (40%) of patients who had prosthetic aortic valves (2 aort, 2 mitral), 3 infective endocarditis, 1 aortic dissection. Also, we found transesophageal echocardiography especially useful in haemodynamically unstable patients such as hypotension causing by prosthetic valves thrombus, infective endocarditis, and/or aortic dissection.

In conclusion, transesophageal echocardiography can be safely performed and may have a high diagnostic and therapeutic impact in critically ill patients at the intensive care unit.

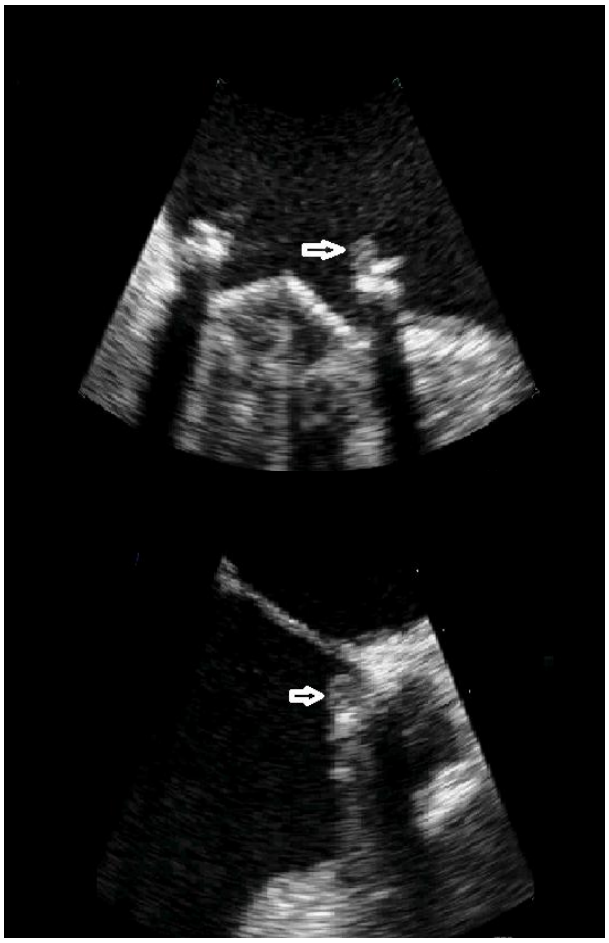

Figure 1a, 1b. Nonobstructive prosthetic mitral and aortic valve thrombus (from left to right, arrows) in the transesophageal echocardiography

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