

COMPARISON OF LEFT VENTRICLE EJECTION FRACTION MEASUREMENT USING LONG AXIS, SHORT AXIS CARDIAC MRI AND TRANSTHORACIC ECHOCARDIOGRAPHY

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ABSTRACT

Background: Cardiovascular disease is the most common cause of death worldwide, causing 17.9 million people to die every year. Imaging plays a role in diagnosing and assessing left ventricular ejection fraction (LVEF), a marker of heart disease. There are various methods of noninvasive measurement of LVEF, such as cardiac magnetic resonance imaging (MRI) and transthoracic echocardiography (TTE).

Objective: To compare the agreement value of LVEF measurement using the calculation of the long and short axes in cardiac MRI and also in TTE.

Methods: This study was conducted at Dr. Sardjito Public Hospital in Yogyakarta using secondary data from 40 patients between 2022 and 2023 who underwent cardiac MRI and TTE within 1 month. LVEF values measured in the long-axis biplane ellipsoid model and the short axis were compared with LVEF obtained by TTE. These values were analyzed using a Bland-Altman plot.

Results: Bland-Altman analysis showed agreement between the LVEF long axis, short axis, and TTE methods. The median ejection fractions were TTE (65.5%), CMR long-axis (63.4%), and CMR short-axis (57.0%).

Conclusion: Bland-Altman analysis showed agreement between the LVEF long axis, short axis, and TTE methods. The mean LVEF obtained using the long-axis method was closer to the mean TTE than to the mean short-axis ejection fraction.

Keywords: ejection fraction, magnetic resonance imaging, echocardiography