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Editorial

Is the Use of Myocardial Performance Index Sufficient in Clinics?

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Received: September 01, 2021; **Published:** September 02, 2021

In this article, we want to talk about the myocardial performance index (MPI). As it is known, transthoracic echocardiography is an imaging method that is frequently used for diagnosis and follow-up in cardiology clinics. MPI is a reproducible, inexpensive, non-invasive and bedside parameter measured by transthoracic echocardiography [1]. There are several limitations to the use of conventional echocardiographic indices for estimating systolic and diastolic left ventricular function. MPI was first described by Tei Chuwa., *et al*. [2]. MPI is a method that is not affected by the geometric structure of the ventricle and is used to evaluate both systolic and diastolic functions of the ventricle [3-5]. Its relationship with mortality and morbidity in cardiovascular diseases has been clearly demonstrated in previous studies. Although this index is not affected by heart rate, age, ventricular structure and afterload, it is easily measured from doppler traces obtained from mitral and aortic flows [6]. It provides significant benefit especially in patients with poor image quality and no transthoracic acoustic window. MPI has prognostic value in patients with coronary artery disease (CAD) risk factors, in patients with overt CAD, and in patients with heart failure [7,8]. It has been reported that increased MPI value is an important determinant in the development of heart failure in the following years. In addition, recent studies have shown that increased MPI is also increased in conditions associated with CVDs [9,10].

Myocardial performance ındex measurement and calculation

MPI is measured using the tissue Doppler method. This index is calculated by the ratio of total isovolumetric contraction time (IVCT) and isovolumetric relaxation time (IVRT) to ejection time (ET). (IVCT+IVRT/ET). IVCT continues until the artioventricular valves are closed and the semilunar (aortic and pulmonary) valves are opened. This period continues until the left ventricular pressure increases very rapidly and catches the aortic pressure. In this period, although there is contraction in the ventricles, there is no filling. As soon as the intraventricular pressure exceeds the aortic pressure, this period ends with the opening of the aortic valves. IVCT is prolonged in conditions that affect the performance of the heart, such as left ventricular myocardial contractility defect, decreased preload.

ET begins after the isovolumetric contraction period. It begins with the opening of the semilunar valves. This period is the period that gives the best information about systolic functions. In the myocardial performance index, when the left ventricle is in the apical long axis position, ET recordings of the LV are taken with the sample volume placed in the ventricular outflow tract just below the aortic valves. When systolic dysfunction develops, ET shortens and thus MPI values increase [11].

IVRT is equal to the time from the closure of the aortic valve to the opening of the mitral valve, provided that the left ventricular volume remains constant.

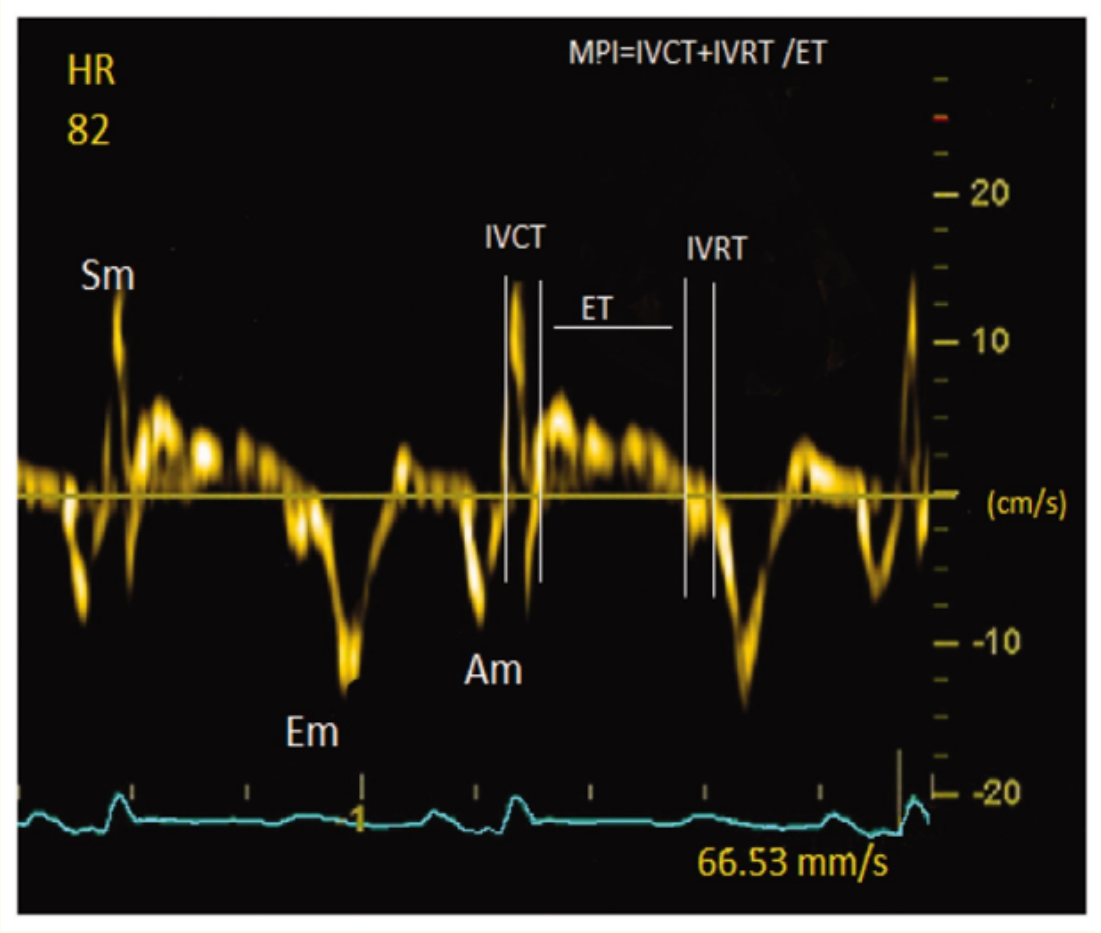

Figure: *MPI measurement.*

As a result, we think that MPI, which provides very valuable information in terms of cardiac functions and is very easy to apply, should become more widespread in clinical use. In addition, we believe that the number of scientific studies on this subject is not sufficient. We believe that new and comprehensive studies on MPI will find an important place in the literature.

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Volume 8 Issue 9 September 2021