7th Advances in Heart Failure 2024

10 e 11 de Outubro

FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO

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GET DONE EVENTS

7th Advances in Heart Failure 2024

10 e 11 de Outubro

FACULDADE DE MEDICINA DA UNIVERSIDADE DO PORTO

Fração de Ejeção

Origem do conceito e razão da sua utilização na IC

José Silva Cardoso

Left Ventricular (LV) Ejection Fraction (EF)

Definition

(LV Ejection Volume / End-diastolic LV Volume) x 100

Folse R. and Branwald E. Circulation, 1962

LVEF
Concept origin

- The development of left ventriculography and indicator dilution techniques in the early 1960s enabled the determination of LVEF

Marwick TH. et al. JACC, 2018

LVEF Evaluation

First Published Paper - 1962

Determination of Fraction of Left Ventricular Volume Ejected per Beat and of Ventricular End-Diastolic and Residual Volumes

Experimental and Clinical Observations with a Precordial Dilution Technic

By ROLAND FOLSE, M.D., AND EUGENE BRAUNWALD, M.D.

Folse RF , Braunwald E. Circulation. *1962*

LVEF
Significance

- **Reflects both cardiac function and remodelling**
- **Is a valuable diagnostic and prognostic tool**

Marwick TH. et al. JACC, 2018

LVEF
Determinants

- **LV contractility**
- **Preload**
- **Afterload**

Marwick TH. JACC, 2018

LVEF
Is different from Cardiac Output

- In compensated HFrEF, despite LVEF is reduced, both systolic and diastolic LV volumes are increased, allowing for preserved stroke volume and cardiac output.

Marwick TH. JACC, 2018

LVEF
Limitations as a marker of HF

- **In HFpEF, although LVEF is normal, LV dysfunction may be identified by markers of LV deformation**

Marwick TH. JACC, 2018

LVEF
Other Limitations

It does not account for speed of LV contraction, a sensitive marker of LV dysfunction

- *This is addressed by **strain rate***

It does not account for intra-ventricular synchrony

It does not reflect twist and untwist features, relevant for systole and diastole

Marwick TH. JACC, 2018

LVEF
Other Considerations

HF pharmachological and non-pharmachological (devices) decision making based on EF, usually neglects that EF measurement was not standardized in RCTs.

Marwick TH. JACC, 2018

LVEF
Other Considerations

A major limitation of EF is that it is sometimes a source of disproportionate focus, to the exclusion of other features.

Marwick TH. JACC, 2018

LVEF
Other Considerations

The limitations of EF measurement accuracy can be of a physiological, technical and clinical nature.

Marwick TH. JACC, 2018

LVEF
Other Considerations

Clinical decisions made on the basis of EF need to be contextualized by the hemodynamic setting.

Marwick TH. JACC, 2018

LVEF
Other Considerations

LV hypertrophy, shape, synchrony, and filling pressure are prognostically important LV parameters that risk being neglected with too much focus on EF.

Marwick TH. JACC, 2018

LVEF
Other Considerations

In circumstances in which the EF is challenging to measure with echocardiography, other systolic indices are potentially important

(These include dP/dt, the myocardial performance index, and GLS).

Marwick TH. JACC, 2018

LVEF
Other Considerations

A focus on EF also risks the exclusion of a number of cardiac function parameters that provide useful physiological and prognostic information.

(RV) size and function, quantification of atrial size, and diastolic filling patterns.

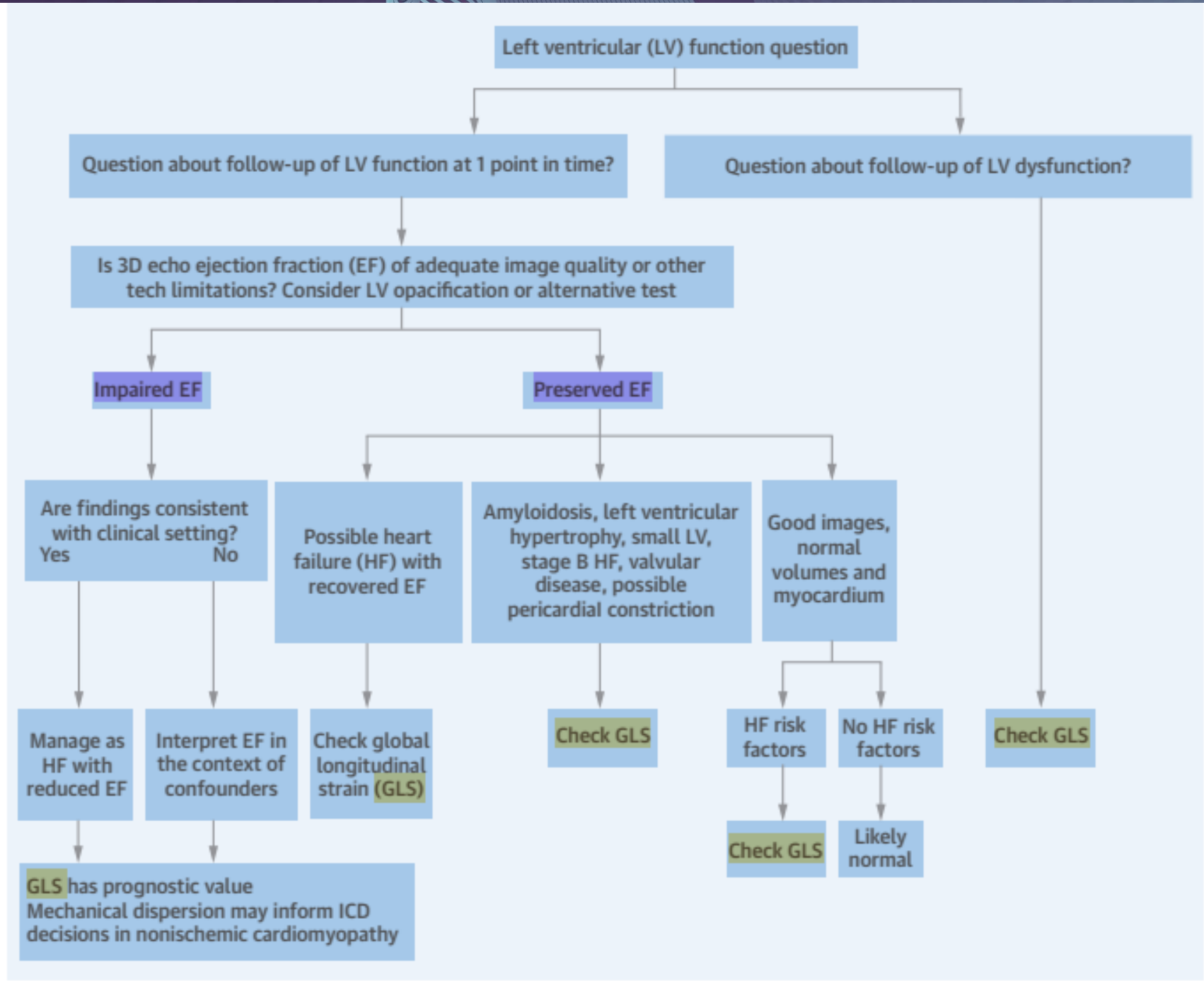
Marwick TH. JACC, 2018

LVEF
Other Considerations

The classification of patients with symptomatic HF into HFrEF and HFpEF also has important therapeutic implications.

The 95% confidence intervals (CIs) of repeated measures of EF are >0.10, so it is inevitable that a substantial number of patients move into and out of this group on subsequent echocardiograms, without implying any change of underlying pathology.

Marwick TH. JACC, 2018



Marwick TH. JACC, 2018