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بعض الوثائق الأصلية تالفة

Pulmonary Venous Flow Patterns In Patients With Dilated Cardiomyopathy A Trans Esophageal Echo Doppler Study

Thesis

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ABBREVIATIONS

DCM	Dilated cardiomyopathy
IRP	Isovolumic relaxation period
A wave	Atrial filling velocity
E wave	Early diastolic filling velocity
E/A ratio	Ratio between peak early to peak late filling velocities
DT	Deceleration time of early diastolic flow
NYHA	New York Heart Association classification
PVF	Pulmonary venous flow
PVFV	Pulmonary venous flow velocity
PV	Pulmonary veins
PSV	Peak systolic velocity
PVS1	Peak early systolic velocity
PVS2	Peak late systolic velocity
PDV	Peak diastolic velocity
PVd	Pulmonary venous diastolic flow velocity
PVa	Pulmonary venous atrial reversal flow velocity
VTIs	Systolic velocity time integral
S/D ratio	Ratio between peak systolic and peak diastolic velocities
TEE	Trans esophageal echocardiography
TTE	Trans thoracic echocardiography
Q-PVs	Time interval from Q deflection of ECG to the occurrence of maximal systolic velocity
PSV-PDV	Time interval from peak systolic to peak diastolic velocities.
LA	Left atrial
LV	Left ventricle
LAP	Left atrial pressure
EF	Ejection fraction
PCWP	Pulmonary capillary wedge pressure.

CONTENTS

INTRODUCTION

INTRODUCTION

Patients with dilated cardiomyopathy have been shown to have not only abnormal left ventricular systolic function,[1] but also abnormal diastolic function. Impaired left ventricular relaxation and abnormal diastolic left ventricular compliance have been reported.[2] A complicating factor in that patients with dilated cardiomyopathy frequently have mitral regurgitation,[3] which affects left ventricular filling by increasing left atrial pressure in early diastole.[4]

The severity of functional impairment, however, correlates poorly with the degree of left ventricular systolic dysfunction.[5] In addition, an increasing number of patients with signs and symptoms of congestive heart failure but without evidence of left ventricular systolic dysfunction are being recognized.[6] These discrepancies have emphasized the importance of diastolic events in this setting and shifted the interest from systolic to diastolic left ventricular dysfunction.

Diastolic abnormalities are common in patients with dilated cardiomyopathy. Impaired left ventricular relaxation and abnormal diastolic left ventricular distensibility are well documented in the course of congestive heart failure.[7] Yet the correlation between

diastolic dysfunction and the symptoms in patients with dilated cardiomyopathy remains to be defined. Recent studies[8] have shown the utility of doppler echocardiography in assessing left ventricular diastolic filling. Indices of diastolic function obtained with this technique correlate well and are probably superior to those obtained by contrast angiography or radionuclide study.[4]

Definition

The clinical definition of diastole involves the time period beginning at end-ejection (closure of semilunar valves) and extending until the atrio-ventricular valves close. For the left ventricle, the duration of diastole is from aortic valve closure to mitral valve closure.[9]

Normal diastolic left ventricular performance can be defined as the amount of filling of the left ventricle necessary to produce a cardiac out put commensurate with the body's need at a mean pulmonary venous pressure of less than 12 mmHg. Therefore, diastolic dysfunction can be defined as an impaired capacity of the ventricle to accept blood or to fill without a compensatory increase of atrial pressure. Thus, ventricular filling may be slow, delayed, or incomplete unless atrial pressure is increased. Diastolic left ventricular dysfunction is present when the mean pulmonary

venous pressure is elevated. When defined in this manner, the most common cause of left ventricular diastolic dysfunction is systolic dysfunction. However primary diastolic dysfunction in the absence of systolic dysfunction, is an increasingly recognized condition. Abnormalities of left ventricular filling that would not produce an adequate cardiac out put, with a mean pulmonary venous pressure below 12 mmHg, activate compensatory mechanisms that elevate pulmonary venous pressure. Thus, abnormalities of left ventricular diastolic filling do not usually produce a reduction of cardiac out put at rest; instead, pulmonary venous congestion is the most common result of diastolic dysfunction.[10]

Phases of diastole

1.Isovolume relaxation period

It starts with aortic valve closure and ends when ventricular pressure falls below atrial pressure and filling begins. During this phase there is a sharp decline in ventricular pressure with no significant change in the volume. Some authors do not accept the isovolumic relaxation period as part of diastole. Preferring to define the opening of the mitral valve as the onset of diastole.[11]

2. Rapid filling phase

It starts with the opening of mitral valve and the onset of ventricular filling till the onset of the plateau. Under normal conditions. At physiologic resting heart rates, this period comprises less than one-third of diastole, but it accounts for as much as 80% of ventricular filling and thus of end diastolic volume.

The peak filling rate is also influenced by the left atrial-left ventricular pressure gradient or the driving force across the mitral valve.[11]

3. Diastasis

It occurs when ventricular inflow slows and forms a plateau on the volume curve and ends when atrial systole begins.

Only the blood returning from the lungs flows through the left atrium into the left ventricle.

The duration of this phase is variable and less than 5% of the filling occurs during this period. When tachycardia develops diastasis becomes shortened or disappears, but little effect is seen on early diastolic filling.[11]

4. Atrial systole

It is the final phase of diastole. Atrial contraction increases atrial pressure. This produces a left atrial-to-left ventricular pressure gradient that propels blood into the left ventricle. The