

Role of Gated Spect Combined with Speckle Tracking Echocardiography and Pro- BNP Level in Early Detection of HCV Cirrhotic Cardiomyopathy

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BACKGROUND:

Hepatitis C is found worldwide. The most affected regions are WHO Eastern Mediterranean and European Regions. Egypt holds a unique position in the epidemiology of hepatitis and liver diseases. Egypt is also home for the highest prevalence of hepatitis C virus (HCV) in the world, with an overall rate of approximately 22% up to 40% in some areas.

Extrahepatic manifestations vary from common to infrequent. The cardiac manifestations in HCV patients are multifactorial and still incompletely defined. A cardiac dysfunction in patients with cirrhosis characterized by impaired contractile responsiveness to stress and/or altered diastolic relaxation with electrophysiological abnormalities in the absence of other known cardiac diseases and called cirrhotic cardiomyopathy (CCM). The prevalence is reported to be between 40 to 50% in cirrhotic patients independent of liver disease etiology. CCM occur in two stages: a subclinical one and another clinically manifest. Because CCM is asymptomatic, except during situations of stress, prevalence studies are limited. The use of biomarkers has been useful in clinical practice, especially troponin I, BNP, and N-terminal-pro-BNP (NT-pro-BNP), which may be found in abnormal levels in cirrhosis. BNP and pro-BNP elevation is associated to the severity of cirrhosis and cardiac dysfunction, but not to hyperdynamic circulation. Non-invasive stress testing, echocardiography provides valuable information regarding the development of clinically important systolic and diastolic dysfunction. Trans-thoracic echocardiography is non-invasive, available at the bedside, and low-cost relative to other imaging modalities. Recent advances in echocardiographic applications have resulted in the development of the concept of myocardial

deformation imaging and measurement of strain and strain rate. Two-dimensional (2D) speckle-tracking echocardiography (STE) is a non-Doppler modality for the offline evaluation of myocardial mechanics by strain and SR. Nuclear imaging is very well-validated test for proper diagnosis of disease pathophysiology, prognosis and guidance towards optimal therapy.

OBJECTIVE:

The aim of this study was to evaluate the ability of gated SPECT, Speckle Tracking Echocardiography and Pro-BNP level in early detection of subclinical HCV related cirrhotic cardiomyopathy.

PATIENTS AND METHODS:

Forty Child A HCV related patient were included. Pro BNP was measured, conventional 2D echocardiographic assessment in addition to GLS of left and right ventricles and exercise Tc99 gated SPECT. In comparison to 20 matched healthy subjects.

RESULTS:

patients showed decrease in GLS of the left ventricle in comparison to control group. Also, chronotropic incompetence was detected in patients group. Right ventricular assessment by conventional and speckle tracking echocardiography in addition to gated SPECT revealing normal values.

Also, pro BNP level was within normal reference ranges. Conclusions:

GLS showed the highest sensitivity and specificity in detection of early changed in cirrhotic cardiomyopathy. Stress gated SPECT studies showed a good ability in detection of subclinical cirrhotic cardiomyopathy. Pro-BNP did not show an ability in detection of subclinical cirrhotic cardiomyopathy.