Summary

Assessment of left ventricular wall motion is one of the most important aspects in evaluating left ventricular function **(Fujii et al., 1984).**

The association of left ventricular wall motion abnormality with myocardial infarction and myocardial ischemia is well established by using two-dimensional echocardiography but no standard has evolved and all these methods remain impractical for routine clinical use and it is subjective methods depending on the reader's experience **(Hager et al., 1979).**

Color – kinesis is a relatively new echocardiographic technique that allows color-encoding of endocardial motion in real time. The major advantage of this modality is that it provides the basis for objective and automated evaluation of regional systolic and diastolic function, which may have a direct impact on the diagnosis of various myocardial disease states and in particular coronary artery disease **(Mor-Avi et al., 1997).**

Color-kinesis used acoustic quantification technology to classify each pixel as either blood or tissue on a frame-by-frame basis. After good quality 2-D echo cardiographic image was achieved, color encoding of the 2-D echo image was done by selecting the image systole of color-kinesis options in the available echocardiographic system **(Bednarz et al., 1998).**

Summary

We aimed from our study to evaluate color-kinesis as a new method in diagnosis of patients with ischemic heart disease. Also we aimed to evalutate the accuracy of acoustic quantifrcation in the measurements of LV ejection fraction.

Forty patients with ischemic coronary artery disease, who underwent coronary arteriography one month of echocardiography were included in our study. Also our study included ten healthy subjects as controls.

All patients underwent.

1- History and physical examination.
2- 12- lead surface ECG.
3- Laboratory investigation including lipid profile and blood sugar.
4- Echo cardiographic examination was done by:
    a) Conventional 2-D echo cardiography
    b) Color – kinesis .
    c) Acoustic-quantification to measure LV ejection fraction.
5- Coronary angiography to assess the extent and severity of the coronary artery lesions.
6- Left ventriculography to assess segmental wall motion abnormalities.

All controls underwent the previous investigations except coron-ary angiography and left ventriculography.

The mean age for patients was 47.8 ± 7.4 years while the mean age for control subjects was 38.5 ± 4.8 years.

Summary

Patients group showed 24 patients (60%) were smokers, 21 patients (52%) hypertensives, 25 patients (62%) diabetics, 12 patients (30%) hypercholesterolemics.

There were 14 patients showed single vessel disease, 22 patients showed two vessels disease and 4 patients showed three vessels disease.

Ejection fraction measured by different methods revealed:- For patients group : mean ejection fraction measured by 2-D echo was 45.4 ± 4.2 . by acoustic quantification 48.7 ± 5.1, and by contrast ventriculography was 50.1 ± 4.7.

For control group : mean ejection fraction measured by 2-D echo was 65.1 ± 2.4 and by acoustic quantification was 68.4 ± 2.7.

Correlation between ejection fraction measured by 2-D echo and acoustic quantification in all populations studied showed that there were strong correlation, r = 0.94 while correlation between ejection fraction measured by 2-D and contrast ventriculography in patients group was r = 0.95 and correlation between ejection fraction measured by acoustic quantification and ventriculogram in the same group was r = 0.97. So color kinesis compared to 2-D echo is better in estimation of EF, taking contrast ventriculogphy as a reference.

As regard segmental wall motion abnormalities, agreements between 2-D echo and contrast ventriculography appeared to 86.1% while that between color- kinesis and ventriculography appeared to 95.2%. The mean value for accuracy of 2-D echo for dignosis of segmental wall motion abnormality when compared to contrast ventriculography as a reference method appeared 0.68 while that between color-kinesis and ventriculogram appeared 0.81

Summary

In control subjects there was a very close agreement of the 2-D echocardiography and color-kinesis as regard, the pattern of regional wall motion.

In patients subjects, all over 280 segments studied, color-kinesis was significantly better than 2-D echo on the definition of normal versus abnormal segments (95.2 % of segments correctly evaluated by color-kinesis versus 86.1 % by 2-D echo. $p < 0.05$)

- We had found the following limitation .

The small number of patients and their different diagnosis.

Color kinesis depends on good quality 2-D echo cardiogram.

Color- kinesis not suitable in patients without sinus rhythm.

We concluded that color-kinesis is a new echo cardiographic technique that provide more accurate assessment of regional wall motion abnormalities especially in patients with ischemic heart disease. We also concluded that acoustic quantification is a convenient method for better measurements of ejection fraction.