SUMMARY AND CONCLUSION

The study included 75 patients of both sex randomly selected from those presented to the CCU at Benha University Hospital with acute myocardial infarction during the period from Feb. 2007 to Dec.2008.

The patients were divided into three groups each included 25 patients:

- *Group (A):* Extensive anterior myocardial infarction.
- *Group (B):* Non ST elevation myocardial infarction.
- *Group (C):* Inferior myocardial infarction.

The aim of this study is to assess the effect of left ventricular mass index on the systolic and diastolic function in patients with acute myocardial infarction.

Difference between the 3 groups:

In the present study the percent of mass loss and percent of increase of ESV & EDV is more in the NSTEMI (group B) than STEMI either anterior or inferior MI (group A, C) but the difference is statistically insignificant (P>0.05).

The incidence of clinical events was more in the group B than in group A & C and the difference is statistically significant (P<0.05).

Also there is higher angiographic score in group (B) than group (A), (C) which was statistically significant (P<0.05).

The prognostic value of LVMI when EF% ≥50%:

In the present study low LVMI than the normal value in patients with EF ≥ 50 % in both group (A) & (B) during the 1st assessment is of prognostic value for further drop of the LVMI and EF% in the follow up

assessment (p<0.05).but in group C the mean of the mass index is within normal in both 1st and 2nd assessment.

LV volume, systolic function and mass index:

In our study there is increase of the LV volume (LVESV, LVEDV) in the anterior, NSTEMI groups and was within normal in the inferior groups.

Also there was loss of the LVMI in patients with anterior and NSTEMI but the mass was within normal in patients with inferior MI.

Also there was more loss of the mass in the group that did not receive thrombolytic therapy but the difference was statistically insignificant.

In the present study the increase in ESV, EDV and mass loss is parallel to decreased systolic function in group A, B, C with positive correlation that is statistically significant and the incidence of heart failure with reduced EF was 20%in group A, 24% in group B nd 4% with group C.

The relation between LVMI & diastolic function:

In the present study the diastolic function in group A(anterior MI) was normal in 60 %, grade 1 in 28 %, grade 2 in 4% and grade 3 in 8% in the 1^{st} assessment but in the 2^{nd} assessment the function was 28%, 52%, 8% and 12 % for normal , grade 1,2and 3 respectively

In group B (NSTEMI) the diastolic function was normal in 44 %, grade 1 in 40 %, grade 2 in 8% and grade 3 in 8% in the 1^{st} assessment but in the 2^{nd} assessment the function was 12%, 64% ,4% and16 % for normal, grade 1, 2and 3 respectively.

In group C (inferior MI) the diastolic function was normal in 40 %, grade 1 in 40 %, grade 2 in 4% and grade 3 in 8% in the 1st assessment but in the 2nd assessment the function was 24% 48% ,16% and12 % for normal , grade 1, 2and 3 respectively.

Also there is negative correlation in the 3 groups in the 1st and 2nd assessment between LVMI and the diastolic function.

Post infarction MR:

In the present study 52 % of patients developed MR 20 % in the anterior group and 16 % in MSTEMI group and 16% in the inferior group during the 1st and 2nd assessment

It was associated with LV dilation, reduced systolic function and reduced LVMI in the anterior MI and NSTEMI groups where mean of the mass was 43gm/m² in the anterior group and 43.4gm/m² in the NSTEMI group but it was within normal in the inferior group 60gm/m².

MR was mild in 25 %, moderate in 15% and moderately sever in 22 % in the 3 groups

The relation between coronary artery lesion and LVMI:

In the present study the mean of the coronary artery lesion score as assessed by the Gensini score is 37 in anterior MI, 45 in NSTEMI and 16 in inferior MI.

The correlation between angiographic score and LVMI is negative and statistically significant in anterior MI but insignificant in NSTEMI and inferior MI.

The relation between LVMI and cardiac enzymes:

In the present study the mean of CPK- MB was108, 89, 60 in anterior, NSTEMI and inferior MI groups.

The correlation between LVMI and CPK-MB was negative in anterior MI, NSTEMI and inferior MI groups but is statistically insignificant.

Conclusion:

Although a number of studies found that the increased LVMI is a predictor of future events there are limited data about the association of LV mass and geometry to prognosis following myocardial infarction **(Anil, 2005).**

We can conclude from this study that the reduced LVMI has a significant effect on the systolic and diastolic function in patients with acute myocardial infarction either ST elevation MI (especially the large infarction) or NSTEMI.

Most of the recent trials that used CT, MRI or 3D echo found that the mass is reduced after MI in contrast the studies used M-Mode Eecho in assessing the LVMI (concluded increased mass) as M-Mode Echo is limited in its accuracy for measuring LV mass since it assumes a uniform thickness of the LV, which is not the case in areas of myocardial infarction with geometric deformity of the LV cavity.

This study represent a simple, non invasive, non expensive, rapid well approved method of evaluation of the LVMI by 2D (area length method) with results equivalent to CT, MRI but without exposure to radiation or need for contrast and suitable for patients with devices or are claustrophobic.

Also it is well known that EF% is a predictor of outcome after myocardial infarction and reduced EF% is considered poor predictor. In the study we found that the EF% may show minor change or deviation from normal level due to the hypertrophy of non infracted segment but at the same time there was significant loss of myocardial mass and it was associated with clinical events.

Also when we compared the results of the 3 groups, we found that NSTEMI group had more loss of the LVMI and more increase in the percent of dilation of the ESV, EDV and more decrease in EF% and more worse clinical events on the short term which disagree with most of the papers that found that equal or even better outcome of NSTEMI on the short term.

So we can consider that reduced LVMI after myocardial infarction is predictor of poor outcome and that serial echo-Doppler study for assessing the EF% and LVMI by area length method is recommended after myocardial infarction.

STUDY LIMITATIONS

The limitations of this study are:

- Small number of the study group
- Diastolic function assessed only by Doppler and no available tissue Doppler.
- CPK-MB performed in different laboratory, and not at definite time in all patients.
- Some patients received thrombolytic therapy while others did not.
- Lack of comparison with other imaging modalities for assessment of the LV mass.