

Abstract

Introduction:

The introduction of Gated SPECT cardiac imaging using technetium^{99m}sestaMIBI offered us the chance to study & document the phenomenon of stunning in the setting of acute STEMI.

Aim of Work:

To study the impact of revascularisation using primary PCI on LVED and LVES volumes using gated SPECT study.

Patients & methods:

Our study included 27 pts presenting with acute STEMI eligible for primary PCI. All pts were injected 25 mCi Tc^{99m}sestaMIBI on admission & acquisition of rest GSPECT MPI was done after revascularization & within 6 hours of injection to get the first set of images assumed to get the initial functional parameters [before PCI]; LVEDV (EDV1), LVESV (ESV1) and LVEF (EF1). Another set of images was acquired 2-3 days later to get the second set of functional parameters [after PCI] (EDV2, ESV2, &EF2).

Results:

A total of 27 pts (25 males) with acute STEMI were included, 5 pts were diabetic, 4 hypertensive, 20 smoker, 6 dyslipidemic, & 9 pts had +ve FH of CAD. Mean duration of chest pain was (4.2 ± 2.7 hours), mean door to balloon time was (1.5 ± 1 hours).

Seventeen pts had anterior STEMI & 10 had inferior. Upon coronary angiography the culprit vessel was LAD in anterior MI pts & RCA in inferior MI pts. Primary PCI was considered angiographically successful (TIMI 2-3) in 26 pts & 13 pts had other vessels involved (LAD in 5 pts, RCA in 5 pts, LCx in 4 pts & diagonal in 2 pts). There was significant reduction in EDV & ESV after PCI [(129.4 ± 36.3 vs. 105 ± 37 ml, $p < 0.0001$) & (61.8 ± 21.6 vs. 49.3 ± 21 ml, $p < 0.0001$) & significant increase in EF ($53 \pm 9.8\%$ vs. $57.6 \pm 10\%$, $p < 0.0001$). The ESV1 was higher with LAD as a culprit vessel when compared to RCA (70 ± 24 vs. 46 ± 14 ml, $p = 0.009$), & was insignificantly higher in multivessel pts (65 ± 27 vs. 58 ± 22 ml, $p = 0.6$). EDV1 was insignificantly higher in LAD pts (135 ± 30 vs. 118 ± 29 ml, $p = 0.2$) & with multivessel involvement (133 ± 40 vs. 125 ± 33 ml, $p = 0.5$). EF1 was significantly lower in LAD pts, (48 ± 9 vs. $60 \pm 6\%$, $p = 0.001$), & insignificantly lower in multivessel involvement (50 ± 10 vs. 52 ± 10 ($p = 0.6$)) & there was no significant correlation between ESV1, EDV1 or EF1 and initial TIMI flow, ($p > 0.05$).

ESV2 was significantly higher in LAD pts (56 ± 20 vs. 36 ± 16 ml, $p = 0.01$). EDV2 was insignificantly higher in LAD pts (109 ± 36 vs. 97 ± 40 ml, $p = 0.4$). EF2 was significantly lower in LAD pts (54 ± 9 vs. $63 \pm 7\%$, $p = 0.014$). EDV2, ESV2 or EF2 were not significantly correlated to TIMI flow post PCI or [TIMI pre-TIMI post) ($p > 0.05$).

Conclusion:

Gated SPECT study in the session of acute STEMI may be used to assess the LV functional improvement after primary PCI. LVESV & LVEF are affected mainly by LAD acute occlusion & not by multivessel involvement or TIMI flow in the setting of acute STEMI.

Key Words: Primary PCI, Gated SPECT, Stunning