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Intracoronary Nicorandil mixed with contrast through a thrombus aspiration catheter after initial failed aspiration in the infarct related artery vessel reduces no flow/slow flow during primary angioplasty

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Aim: The exact cause and management of no flow/slow flow remains elusive till date and the incidence of no flow increases as the duration of door to balloon time increases in primary angioplasty. One of the main reasons for this complication is clot embolization to distal vessels due to too much manipulation of an organized clot by catheter and balloons. If after one or two attempts of thrombosuction the flow in the culprit vessel does not improve, then we try to place the aspiration catheter as distally as possible and infuse 1-2 mg of nicorandil solution diluted with 50 percent of contrast solution. This modification has two advantages, the distal vessel is well delineated, the extent of the lesion can be assessed well and the whole clot can be entrapped by appropriate sized stent establishing Thrombolysis in myocardial infarction (TIMI) III flow. Secondly locally delivered high concentration of nicorandil in the infarct vessel reduces coronary spasm and protects from ischaemic reperfusion injury when the vessel opens up.

Methods and Results: Between March 2013 and March 2015 30 STEMI patients with thrombotic total occlusion of arteries during primary angioplasty were retrospectively analyzed. The results of using this novel method of infusing intracoronary nicorandil in the distal culprit vessel through a coronary thrombus aspiration catheter (number of patients 16) were compared to those patients without the use of this method (number of patients 14). Mean age of presentation was 57 +/- 8 years, more than half of the patients were males (60%) and the majority was anterior wall myocardial infarction (50%). The culprit vessel was left anterior descending artery LAD in the majority of cases (50%) right coronary artery RCA (30%) and the rest (20%) were left circumflex artery. The average window period of presentation was 10+/-2 hours. 14 patients were in cardiogenic shock and intra aortic balloon pump (IABP) was used in all these patients. In all MI patients thrombus aspiration catheter was used, and Gp2b3a inhibitors were used in 10 cases. In 12 out of 16 patients TIMI III flow and good myocardial blush were achieved by using this innovative approach. Repeated thrombosuction by aspiration catheters or predilatation of the thrombotic lesions yielded adequate flow and good myocardial blush in only 5 out of 14 cases (p=0.03). In the first group where intracoronary nicorandil was given, 2 out of 16 patients succumbed, while in other group 4 out of 14 patients died at the end of 30 days (p = 0.27)

Conclusions: Our initial analysis revealed that use of this novel concept of infusing intracoronary nicorandil mixed with contrast beyond the totally occluded culprit vessels in acute MI patients helps to achieve better myocardial perfusion during primary angioplasty with improved survival outcomes. However, larger scale prospective multifactorial adjusted, randomized controlled studies are required to confirm our preliminary findings.

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