High Pressure Balloon Inflation During Primary PCI for Acute MI: Beneficial or Deleterious?

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Background:
High-pressure [HP] balloon inflation after coronary stenting in during elective PCI has become routine for 2 reasons. First, HP ensures complete stent expansion with better flow characteristics which decrease the risk of thrombotic complications, second, acute stent dimensions are maximized by HP inflations, and stent dimensions are important determinants of angiographic or clinical restenosis. However, in the setting of STEMI crushing can lead to thrombus and plaque embolization and the use of HP balloon inflation remains to be clarified.

Methods:
We used our clinical database from 1/2001 to 7/2012 consisting of all patients treated by primary PCI during 12 hours for acute AMI excluding patients with cardiogenic shock. The clinical and angiographic results of patients were evaluated in two groups of patients according to the last balloon inflation pressure : group "A"-492 patients (16 atm)- and group "B"-961patients(or =16 atm).

Results:
There were more patients with Cillip classI in group"A" (P0.001) and more males in group "B"(P0.005). The incidence of blush = or 2(P0.02), drug eluted stents (p0.0001) and second stent (P0.0002) was higher in group"B" with the same rates of no reflow and TIMI flow for both groups .

The 12 months rates of MI and stent thrombosis were higher in group "A"(P0.002 and P0.003 respectively). There were similar rates of death,TVR and MACE for two groups .

Conclusion:
The higher incidence of MI and stent thrombosis after 12 months in group "A" with better blush in spite of more frequent need for second stent in group "B" suggested beneficial effect of HP balloon inflation.The similar rates of death,TVR and MACE in two groups raises concerns that ,probably in individual case with STEMI risk/benefit ratio of HP balloon dilatation may be different.