has been conducted. A recurring debate still exists regarding its optimal dose. The aim of the present study sought to establish the dosage of IC adenosine associated with minimal side-effects and above which no further increase in flow can be expected.

**METHODS** In 30 patients, Doppler-derived flow velocity measurements were obtained in 10 right coronary arteries (RCA) and 20 left coronary arteries (LCA) free of stenoses greater than 20% in diameter. Flow velocity was measured at baseline and after 8 mL bolus administrations of 9 escalating doses of adenosine (4 to 500 μg). The hyperemic value was expressed in percent of the maximum flow velocity reached in a given artery (Q/Qmax, %).

**RESULTS** Q/Qmax did not increase significantly beyond dosages of 60 μg for the RCA and 160 μg for LCA. Heart rate did not change, while mean arterial blood pressure decreased by a maximum of 7% (p<0.05) after bolus injections of IC adenosine. The incidence of transient A-V blocks was 40% after injection of 100 μg, in the RCA, and was 15% after injection of 200 μg in the LCA. The duration of the plateau reached 12±13 s after injection of 100 μg in the RCA and 21±6 s after the injection of 200 μg in the left LCA. A progressive prolongation of the time needed to return to baseline was observed.

**CONCLUSIONS** This wide-ranging dose-response study indicates that an IC adenosine bolus injection of 100 μg in the RCA and 200 μg in the LCA induces maximum hyperemia while being associated with minimal side effects.

**TCT-294**
Contrast-induced microvascular dilatation: implications for fractional flow reserve measurements

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**BACKGROUND** The use of adenosine is sometimes considered as a limiting factor for of fractional flow reserve (FFR) measurements. The present study sought to quantify the potential of contrast medium (CM) to induce microvascular dilatation as assessed by the changes in Doppler flow velocity measurements.

**METHODS** In 30 patients, Doppler-derived flow velocity measurements were obtained in 10 right coronary arteries (RCA) and 20 left coronary arteries (LCA) free of stenosis greater than 20% in diameter. Flow velocity was measured at baseline and after 8 mL intracoronary (IC) bolus administrations of arterial blood at body temperature, saline and CM compared to maximum hyperemia induced by escalating dosages of adenosine (4 to 500 μg) at room temperature. The hyperemic value was expressed in percent of the maximum flow velocity reached in a given artery (Q/Qmax, %). To translate the IC adenosine dose into its effect on FFR, a model based on standard coronary physiology linked the degree of hyperemia to the relative distal coronary pressure (Pd/Pa).

**RESULTS** Doppler flow velocity varied among 8 mL IC boluses of arterial blood, saline and contrast (p<0.001), and all pairwise comparisons were significant (p<0.001 for blood and contrast; p=0.041 for saline and blood; and p=0.013 for saline and contrast). Hyperemic response after injection of 8 mL of CM reached 59±17% of that achieved maximum hyperemia. While Baseline, arterial blood and saline achieved respectively 38±12%, 45±14% and 51±14% of Q/Qmax. Heart rate did not change, while mean arterial blood pressure decreased by a maximum of 7% (p<0.05) after bolus injections of IC adenosine. The incidence of transient atrioventricular blocks was 38% after injection of 200 μg, while it was not observed with CM. According to our theoretical model, when CM reach 59±17% of that achieved maximum hyperemia after adenosine in Doppler flow velocity it correspond to a Pd/Pa ratio of 0.85, where FFR is 0.79 and the resting Pd/Pa is 0.90.

**CONCLUSIONS** CM reaches approximately 60% of the maximal flow velocity as compared to Adenosine IC. This corresponds to a difference of only 6% when ‘translated’ in terms of FFR.

**CATEGORIES** Imaging: FFR and Physiologic Lesion Assessment

**KEYWORDS** Adenosine, Contrast Medium, Hyperemia

**TCT-295**
The interaction between fraction flow reserve value of main and major side branch in a swine model

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**BACKGROUND** The aim of this study was to evaluate the effect of side branch stenosis on the FFR of the main branch.

**METHODS** The proximal segments of the left anterior descending (LAD) and the left circumflex artery (LCX) were exposed through left lateral thoracotomy in eight swine (55 to 70 kg). Each proximal segment, no major branches in between them, was encircled with a Teflon pledget complex which was sutured and snared with a plastic tourniquet. Five degrees of stenosis (angiographic diameter stenosis of 0%, 25%, 50%, 75%, and 100%) were made by tightening up the pledgets. FFR values of the LAD and the LCX were obtained simultaneously with two pressure wires in each coronary artery.

**RESULTS** Neither the FFR value of the LAD nor of the LCX was significantly associated with the other side stenosis (F = 0.237 and p = 0.627 for LCX FFR, F = 0.541 and p = 0.461 for LAD FFR).

**CONCLUSIONS** The FFR value of the main branch was not significantly associated with the one of the side branch in all degrees of stenosis.