**INFLUENCE OF CONTRAST MEDIUM ON THE ENDOTHELIAL CELL LINE HCMEC**

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Background: Endothelial dysfunction (ED) and systemic vascular injury following percutaneous coronary intervention (PCI) are associated with contrast medium (CM) administration. Previously, we showed that brain natriuretic peptide (BNP) administration 24 hours after percutaneous coronary intervention (PCI) improves endothelial dysfunction (ED). Aims: The purpose of this study was to examine the effect of contrast medium (CM) administration on human coronary microvascular endothelial cells (HCMEC).

Methods and Results (in vitro): HCMEC were treated with 10% CM, in the presence or absence of BNP. eNOS, corin, and cGMP levels in the treated cells were measured and compared with those in untreated cells. For both treatments, eNOS reduced significantly (p = 0.001) and corin increased significantly (p = 0.002). CM treatment did not affect cGMP levels (p = 0.278) that increased significantly on combined treatment with hBNP (p = 0.001). Immunofluorescence staining of HCMEC showed a distorted cellular cGMP distribution with CM treatment that was corrected on combined treatment with hBNP, with accentuated subsarcolemmal staining. hBNP treatment alone reduced corin (p = 0.004), did not affect eNOS (p = 0.4), and significantly increased cGMP (p = 0.0002) levels.

Conclusions: CM reduced eNOS levels in endothelial cells in vitro. Therefore, a reduced NO-cGMP pathway may induce ED in vivo. A compensatory rise in corin that increases BNP, in addition to hBNP administration, maintains cGMP levels via NP-cGMP pathway activation and compensates for cGMP loss from the NO-cGMP source to prevent ED.