**A Validated Peripheral Blood Gene Expression Test Score Correlates with Plaque Volume and Components Measured by Intravascular Ultrasound with Radiofrequency Backscatter Analysis (IVUS-VH)**

**Meeting:**
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**Background:** A peripheral blood gene expression algorithm, CorusCAD, has previously been validated to assess the likelihood of obstructive coronary artery disease. IVUS-VH allows for the detection of plaque components based on radiofrequency backscatter analysis. Whether peripheral gene expression can predict plaque composition is unknown.

**Methods:** Fifteen patients (Age: 60 $\pm$ 7 years; 73% Male) prospectively had IVUS-VH using 20 mHz probe with standard pullback (0.5 mm/s). Plaque volume, fibrous tissue (FI), fibro-fatty tissue (FF), necrotic core (NC) and dense calcium (DC) were quantified. Gene Expression score (CardioDX; Palo Alto, CA) was calculated based on a 23-gene algorithm analyzing gene expression from peripheral blood. Plaque components and gene expression score were compared using linear correlation.

**Results:** Higher gene expression scores correlated with higher amounts of plaque volume. Specifically, NC volume and DC volume were higher in those patients with higher scores.

**Conclusion:** This is the first demonstration of the association between a peripheral blood gene expression score and plaque components by IVUS-VH. A higher gene expression score is associated with higher plaque volumes as measured by IVUS-VH.

| IVUS-VH Plaque | Gene Exp Correlation (r) | p-value |
|---|---|---|
| Fibrous Volume | .43 | .11 |
| Fibrous % | -.19 | .49 |
| Fibro-fatty Volume | .21 | .45 |
| Fibro-fatty % | -.04 | .89 |
| Necrotic Core Volume | **.54** | **.03** |
| Necrotic Core % | .23 | .41 |
| Dense Calcium Volume | **.51** | **.05** |
| Dense Calcium % | .06 | .83 |

| | | |
|---|---|---|
| Total Plaque Volume | **.58** | **.02** |