

The Compass Trial (NCT01117506): A Prospective Multi-center, Double-blind Study Assessing A Whole Blood Gene Expression Test For The Detection Of Obstructive Coronary Artery Disease In Symptomatic Patients Referred For Myocardial Perfusion Imaging

Meeting:

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Abstract:

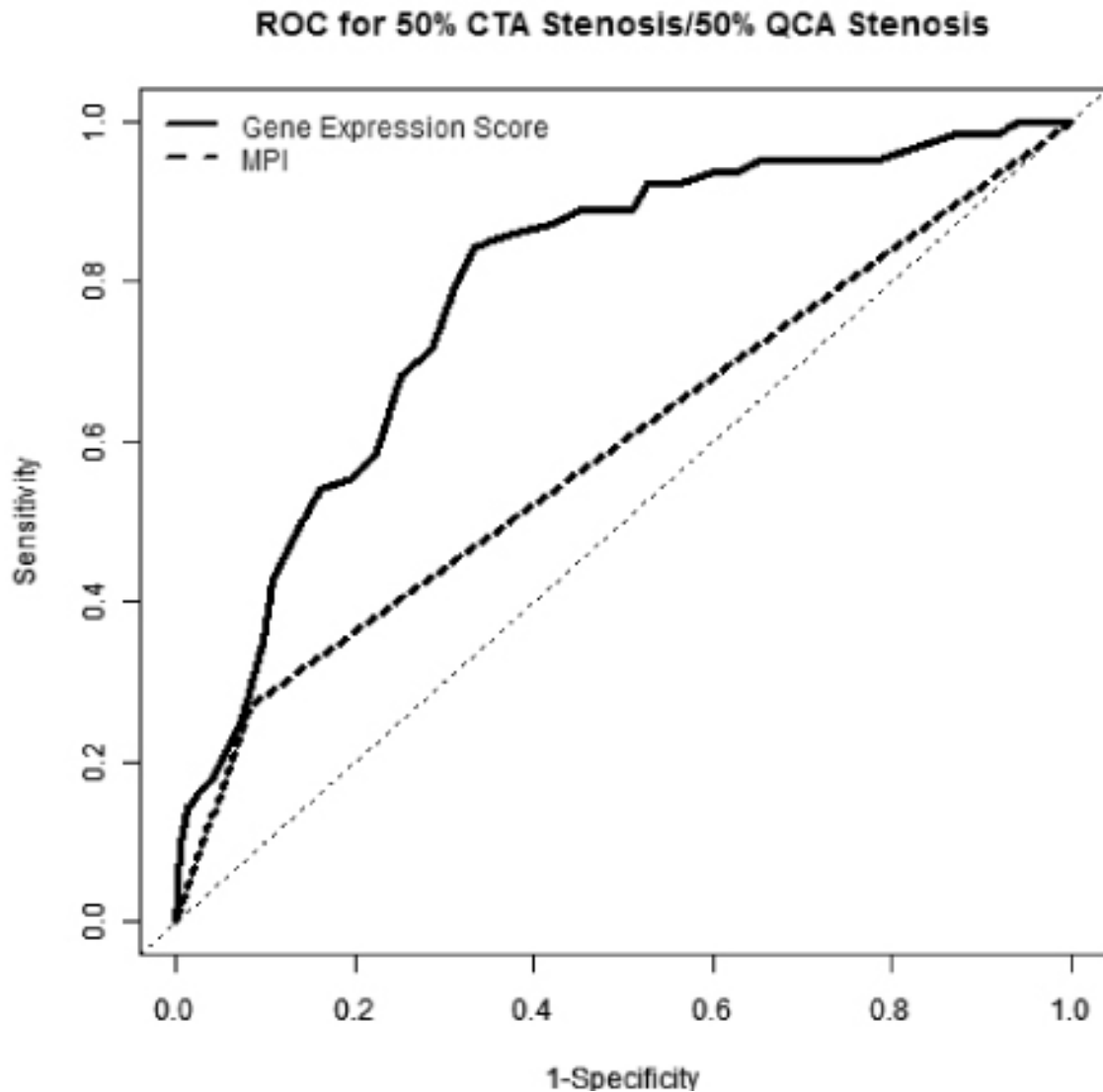
Background: First-time patients referred for elective invasive angiography (cath) often do not have obstructive CAD. We previously validated a whole-blood 23 gene expression score for obstructive CAD ($\geq 50\%$ stenosis by quantitative coronary angiography (QCA)) in an angiographic population. The current study evaluated gene expression testing in a lower risk population clinically referred for myocardial perfusion imaging (MPI).

Methods: COMPASS is a prospective multi-center trial of symptomatic patients without known CAD with blood samples obtained prior to MPI. Gene expression testing was performed in a CLIA approved reference laboratory (CardioDx, Palo Alto CA). Subjects with abnormal MPI were encouraged to undergo cath; those with normal MPI or who declined a clinically-indicated cath had research coronary CT angiography (CTA). Adjudication of obstructive CAD was hierarchical with QCA as primary reference standard followed by core-lab CTA. The prespecified primary endpoint was area under the curve (AUC) of gene expression score in ROC analysis with CAD cases defined as $\geq 50\%$ stenosis by QCA and CTA; a secondary case analysis used 50% by QCA and 70% stenosis by CTA.

Results: From 537 patients enrolled, 431 were analyzed having completed MPI, cath or CTA, and gene expression testing (mean age 56, 48%F). There were 63 cases (15%) in the primary analysis. The study met its primary and secondary endpoints: gene expression score AUC was 0.79 ($p < .001$) and was superior to MPI (AUC = 0.59; $p < .001$, Figure). At a gene expression score threshold of 15, sensitivity and negative predictive value (NPV) were 89% and 97%; MPI

sensitivity and NPV were 27% and 88%. For the secondary case analysis, the gene expression AUC was also higher than MPI (0.77 vs 0.64, $p < 0.01$)

Conclusions: Gene expression testing can assess obstructive CAD in a population referred for MPI and appears superior to MPI in diagnosing obstructive CAD ($p < .001$) in a low disease prevalence population.



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Images. Speaker's Bureau; Significant; CardioDx, Inc.. Consultant/Advisory Board; Significant; Toshiba. **J.A. McPherson:** Consultant/Advisory Board; Modest; CardioDx, Inc. **A.J. Lansky:** Research Grant; Significant; CardioDx, Inc. **F.L. Weiland:** Research Grant; Modest; Gilead, ALGETA, Lantheus. Research Grant; Significant; CardioDx, Inc., GE Healthcare, Astellas, Eli Lilly, Schering Plough, Forest Research Institute. Consultant/Advisory Board; Significant; Astellas. **S.C. Cheng:** Research Grant; Significant; CardioDx, Inc. **S.A. Bloom:** Research Grant; Significant; CardioDx, Inc. **H. Salha:** Research Grant; Significant; CardioDx, Inc. **M.R. Elashoff:** Employment; Significant; CardioDx, Inc. **B.O. Brown:** Employment; Significant; CardioDx, Inc. **H.D. Lieu:** Employment; Significant; CardioDx, Inc.. Consultant/Advisory Board; Significant; CardioDx, Inc. **A. Johnson:** Employment; Significant; CardioDx, Inc. **S.E. Daniels:** Employment; Significant; CardioDx, Inc.. Ownership Interest; Significant; CardioDx, Inc. **S. Rosenberg:** Employment; Significant; CardioDx, Inc.. Ownership Interest; Significant; CardioDx, Inc..