Evaluation of coronary microvascular dysfunction and vasospasm in patients with angina and non-obstructive coronary artery disease (ANOCA)

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INTRODUCTION

- Patients with angina and non-obstructive coronary artery disease (NOCAD) have a 2.4 fold increased risk of major adverse cardiac events (MACE) and substanial morbidity
- Distinct sub-populations of NOCAD exist, including patients with angina without evidence of ischemia on prior stress testing (ANOCA), evidence of ischemia on stress testing (INOCA), or patients with a history of obstructive CAD with prior revascularization (ANOCA-HxCAD)
- Coronary microvascular dysfunction (CMD) and/or vasomotor disorders such as microvascular/epicardial spasm are the most frequent underlying causes of refractory symptoms in NOCAD patients

METHODS

Study Cohort:

- Prospective registry-based cohort study of patients with NOCAD (<50% stenosis in epicardial artery) undergoing coronary functional angiography (CFA)

Objective:

- To assess differences in clinical characteristics, symptoms, and CFA diagnoses in 3 groups of NOCAD patients (ANOCA, INOCA, and ANOCA-HxCAD)

Measures:

- Seattle Angina Questionnaire (SAQ-7), Duke Activity Status Index (DASI), University of California Shortness of Breath Questionnaire (UCSD SOB)
- CFA diagnoses: (1) endothelial-independent CMD (coronary flow reserve [CFR] <2.5) to adenosine testing, (2) endothelial-dependent CMD (coronary blood flow [CBF]<50% or no change in vessel diameter to 54 mcg intracoronary acetylcholine [ACH]), (3) epicardial vasospasm to 108 mcg intracoronary ACH

Statistical Analysis:

- Data were analyzed with Analysis of Variance (ANOVA) and Kruskal-Wallis tests for normally and non-normally distributed variables respectively

RESULTS

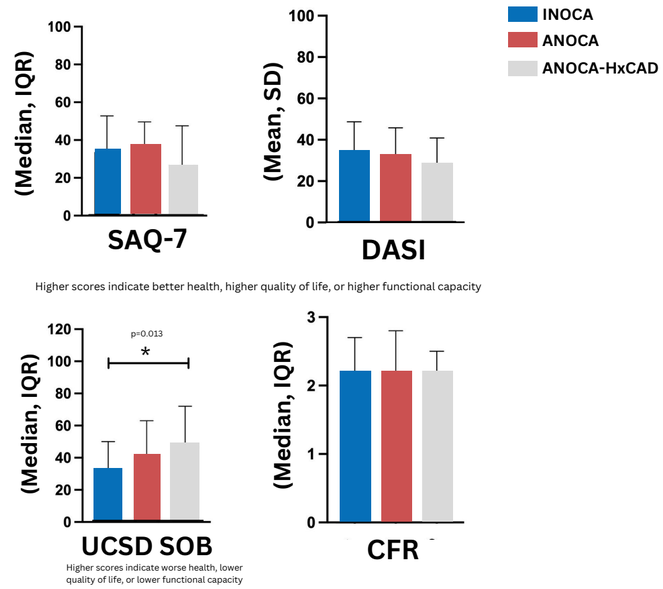

Figure 1. CFR and Validated Questionnaire Scores

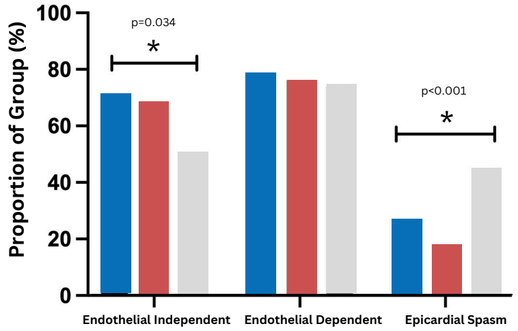

Figure 2. Coronary Functional Angiography Diagnoses

RESULTS CONT.

- 306 NOCAD patients undergoing CFA, 89% were female, with a median age of 58 years (49, 67)
- Compared to ANOCA or INOCA, ANOCA-HxCAD patients had higher prevalence of
  - Hypertension
  - Diabetes
  - Heart failure with preserved ejection fraction
- ANOCA-HxCAD had significantly worse UCSD SOB scores (p=0.013) (Fig. 1)
- No significant differences in between groups in CFR, anginal severity, functional capacity, or quality of life (Fig. 1)
- Endothelial independent CMD was more prevalent in ANOCA and INOCA patients (p=0.034) (Fig. 2)
- Epicardial vasospasm was more prevalent in ANOCA-HxCAD (p<0.001) (Fig. 2)

CONCLUSION

- Despite higher prevalence of risk factors in ANOCA-HxCAD, all NOCAD patients have similar anginal severity, functional capacity, or quality of life
- Despite no prior history of obstructive CAD, ANOCA and INOCA patients had higher rates of CMD, known to be associated with higher risk of MACE and mortality
- Among NOCAD patients, those with a history of CAD had higher prevalence of epicardial spasm
- Evaluation for CMD and vasomotor disorders should be considered in all patients with symptoms and NOCAD