ACCURACY OF TRADITIONAL AGE, GENDER AND SYMPTOM BASED PRE-TEST ESTIMATION OF ANGIOGRAPHICALLY SIGNIFICANT CORONARY ARTERY DISEASE IN PATIENTS REFERRED FOR CORONARY CT ANGIOGRAPHY

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Background: Determining pre-test probability of angiographically significant coronary artery disease (ASCAD; ≥50% stenosis) in patients with chest pain has traditionally relied on the Diamond & Forrester (DF) classification that incorporates age, gender & symptom description. This data was derived from a cohort referred for invasive coronary angiography in 1979. The accuracy of this approach in patients referred for coronary CT angiography (CCTA) has recently been questioned.

Methods: We identified patients without known CAD at a single institution referred for CCTA who provided data for presenting symptom categorization as non-anginal chest pain (NA), atypical angina, & typical angina (TA). Pre-test likelihoods for the presence of ASCAD were estimated according to the method of DF. All CCTA data was evaluated by 2 experienced readers to determine the presence of ASCAD in all coronary segments with a diameter ≥ 2.0mm.

Results: Of 1027 patients included in the analysis, 38 (4%) patients had NA, 643 (63%) atypical angina, 72 (7%) TA, & 274 (26%) were asymptomatic. Men comprised 59% of the cohort & the mean age was 50 ± 12 years. The prevalence of ASCAD among patients with NA, atypical angina, TA & asymptomatic symptoms was 3%, 9%, 19% & 9%, respectively. Stratification of patients by sex, age, & symptom category showed that DF significantly overestimated ASCAD prevalence across all symptom classifications, gender & ages (p<0.001), even when adjusting for differences in standard cardiovascular risk factors. On receiver operating characteristic curve analysis, for the prediction of any ASCAD, DF had an area-under-the-curve of 0.74 among patients with no risk factors & 0.70 in patients with ≥1 risk factor. Across all age & gender subgroups, TA predicted significantly higher prevalence of ASCAD than non-typical angina.

Conclusions: In this low-intermediate risk cohort clinically referred for CCTA, DF greatly overestimated the prevalence of ASCAD across all age, gender & symptom strata. Pre-test ASCAD probability estimation using data derived from patients referred for invasive coronary angiography may significantly overestimate the prevalence of ASCAD in patients referred for modern coronary CTA.