Use of Coronary Computed Tomographic Angiography Findings to Modify Statin and Aspirin Prescription in Patients With Acute Chest Pain

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Coronary CT angiography (CCTA) is used in patients with low-intermediate chest pain presenting to the emergency department for its reliability in excluding acute coronary syndrome (ACS). However, its influence on medication modification in this setting is unclear. We sought to determine whether knowledge of CCTA-based coronary artery disease (CAD) was associated with change in statin and aspirin prescription. We used the CCTA arm of the Rule Out Myocardial Infarction using Computed Angiographic Tomography II multicenter, randomized control trial (R-II) and comparison cohort from the observational Rule Out Myocardial Infarction using Computed Angiographic Tomography I cohort (R-I). In R-II, subjects were randomly assigned to CCTA to guide decision making, whereas in R-I patients underwent CCTA with results blinded to caregivers and managed according to standard care. Our final cohort consisted of 277 subjects from R-I and 370 from R-II. ACS rate was similar (6.9% vs 6.2% respectively, p = 0.75). For subjects with CCTA-detected obstructive CAD without ACS, initiation of statin was significantly greater after disclosure of CCTA results (0% in R-I vs 20% in R-II, p = 0.009). Conversely, for subjects without CCTA-detected CAD, aspirin prescription was lower with disclosure of CCTA results (16% in R-I vs 4.8% in R-II, p = 0.001). However, only 68% of subjects in R-II with obstructive CAD were discharged on statin and 65% on aspirin. In conclusion, physician knowledge of CCTA results leads to improved alignment of aspirin and statin with the presence and severity of CAD although still many patients with CCTA-detected CAD are not discharged on aspirin or statin. Our findings suggest opportunity for practice improvement when CCTA is performed in the emergency department. **(Am J Cardiol 2016;117:319–324)**

The presence and severity of coronary CT angiography (CCTA)–detected coronary artery disease (CAD) provides prognostic value for cardiovascular events and mortality.[1–9] Despite this strong association between CAD detected by CCTA and outcomes, there is limited evidence on whether CCTA findings can influence the prescription of cardiovascular preventive medical therapies such as aspirin and statin. Using both the observational Rule Out Myocardial Infarction using Computed Angiographic Tomography (ROMICAT) I cohort in which subjects at low-intermediate risk presenting with acute chest pain underwent CCTA in the emergency department (ED) with results blinded to caretakers and the multicenter ROMICAT II cohort with similar inclusion criteria but with CCTA results disclosed to providers, we sought to determine whether physician knowledge of CCTA results would result in better alignment of medical therapy prescription with the presence of CAD on CCTA.[10,11]

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See page 324 for disclosure information.

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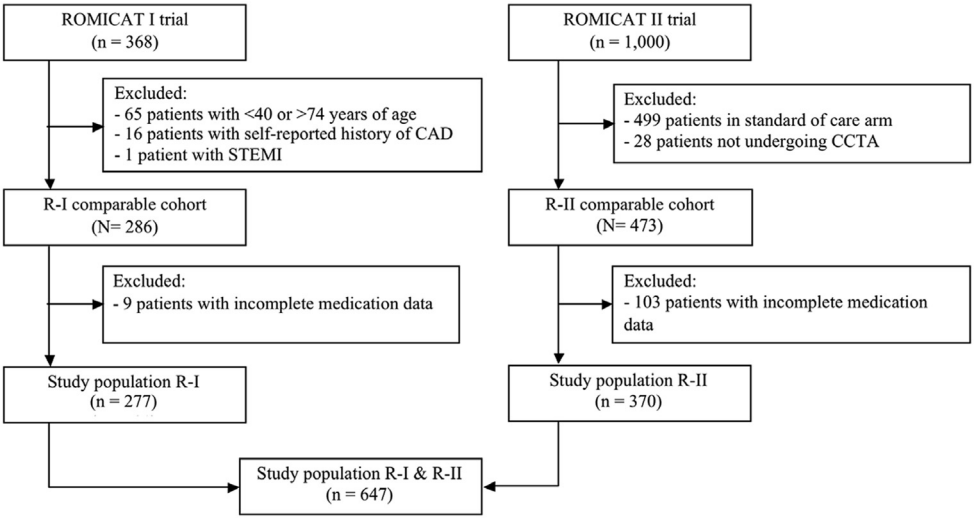

Figure 1. Flow chart summarizing selection of patient population used in the analysis. STEMI = ST elevation myocardial infarction

Methods

We used data from 2 trials that included subjects at low-intermediate risk presenting with acute chest pain to the ED and suspicion for acute coronary syndrome (ACS)[10,11]: (1) the observational ROMICAT I (R-I) study in which 368 subjects were managed according to standard care but underwent CCTA with results blinded to health care providers and (2) the multicenter, randomized controlled ROMICAT II (R-II) trial in which 501 of the enrolled 1,000 subjects were randomized to undergo CCTA, the results of which were disclosed to care providers. Thus, the 2 studies differed as to whether CCTA results were disclosed to care providers. Our institutional review board approved these study protocols and all patients provided informed consent.

Although the trials' inclusion criteria were very similar, there were some differences in exclusion criteria. Therefore, to create comparable cohorts, we excluded subjects from the R-I trial that would have met exclusion criteria for the R-II trial. More precisely, we excluded patients who were aged <40 years or >74 years (n = 65), and those who had a self-reported history of CAD (n = 17). See flow diagram (Figure 1). In the R-II cohort, we excluded 28 subjects who were randomized to the CCTA arm but did not undergo CCTA. Finally, we excluded subjects with incomplete medication data (9 subjects in R-I and 103 subjects in R-II). Thus, the final study population consisted of 277 subjects from R-I and 370 subjects from R-II.

Two physicians blinded to individual patient CCTA results performed medication data collection. Admission and discharge medication prescription data were collected for each patient by systematically reviewing medical records during the index ED visit and hospitalization, including ED admission and discharge notes, as well as inpatient admission and discharge summary if the patient was admitted to the hospital (143 subjects in R-I and 82 subjects in R-II). Contraindication to aspirin (aspirin) therapy was defined as a severe aspirin allergy (anaphylaxis, angioedema, and so forth) or documented intolerance due to a history of major gastrointestinal bleed (requiring transfusion) or intracranial bleed. Contraindication to statin therapy was defined as a history of statin-induced myopathy, rhabdomyolysis, or other documented statin intolerance.

Risk factors were assessed at the time of subject enrollment on the basis of self-report and review of medical records for the index hospitalization. Hypertension was defined as a systolic blood pressure of at least 140 mm Hg or diastolic blood pressure of at least 90 mm Hg or current antihypertensive treatment. Diabetes mellitus was

Table 1
Baseline patient characteristics stratified by trial

Variable	R-I (N = 277)	R-II (N = 370)	P value
Age (years), mean ± SD	52.3 ± 7.9	53.8 ± 8.0	0.026
Men	161 (58%)	196 (53%)	0.20
Hypertension	105 (38%)	194 (52%)	<0.001
Diabetes mellitus	29 (11%)	64 (17%)	0.017
Dyslipidemia	105 (38%)	163 (44%)	0.13
Former or current smoker	141 (51%)	183 (50%)	0.75
Family history of premature CAD	74 (27%)	98 (27%)	1.00
Cholesterol (mg/dl), mean ± SD			
Total	200 ± 40	188 ± 39	<0.001
High-Density Lipoprotein	52 ± 15	50 ± 18	0.41
Low-Density Lipoprotein	118 ± 36	108 ± 37	0.003
Framingham Risk	*(N = 252)*	*(N = 243)*	0.91
<10%	191 (76%)	182 (75%)	
10%-20%	48 (19%)	46 (19%)	
>20%	13 (5.2%)	15 (6.2%)	
Acute Coronary Syndrome	19 (6.9%)	23 (6.2%)	0.75

CAD = coronary artery disease; N = number; SD = standard deviation; R-I = ROMICAT I; R-II = ROMICAT I.