Korelasi Derajat Kalsifikasi Arkus Aorta pada Radiografi Toraks dengan Coronary Artery Calcium (CAC)
Score pada CT Jantung Pasien Unstable Angina Pectoris
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

KORELASI DERAJAT KALSIFIKASI ARKUS AORTA PADA RADIOGRAFI TORAKS DENGAN *CORONARY ARTERY CALCIUM* (CAC) *SCORE* PADA CT JANTUNG PASIEN *UNSTABLE ANGINA PECTORIS*

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ABSTRAK

Latar belakang: *Unstable angina pectoris* (UAP) merupakan manifestasi sindrom koroner akut yang berkaitan dengan aterosklerosis koroner. Kalsifikasi arkus aorta dan arteri koroner merupakan manifestasi aterosklerosis sistemik, sehingga derajat kalsifikasi arkus aorta pada radiografi toraks berpotensi mencerminkan beban kalsifikasi koroner yang dinilai melalui *coronary artery calcium* (CAC) *score* pada CT jantung.

Metode: Penelitian analitik observasional dengan desain *cross sectional* menggunakan data sekunder retrospektif dilakukan pada pasien UAP yang menjalani CT jantung di RSUP Dr. Sardjito Yogyakarta periode Januari 2024-Juni 2026. Sebanyak 52 subjek yang memenuhi kriteria penelitian dipilih secara *consecutive sampling*. Derajat kalsifikasi arkus aorta dinilai secara semikuantitatif pada radiografi toraks menjadi *grade* 0-3, sedangkan CAC *Score* dihitung menggunakan metode Agatston pada CT jantung nonkontras *ECG-gated*. Hubungan kedua variabel dianalisis menggunakan uji korelasi, dilanjutkan analisis stratifikasi.

Hasil: Median usia subjek adalah 63,5 (13,8) tahun dengan proporsi laki-laki 51,9%. Hipertensi dan dislipidemia ditemukan masing-masing pada 90,4% dan 84,6% subjek, sedangkan diabetes, merokok, dan anemia masing-masing sebesar 36,5%, 38,5%, dan 11,5%. Terdapat korelasi positif kuat dan bermakna antara derajat kalsifikasi arkus aorta dan CAC *Score* (r=0,873; p<0,001). Analisis stratifikasi menunjukkan korelasi positif bermakna pada laki-laki (r=0,832) dan perempuan (r=0,913), kelompok *overweight*/obesitas (r=0,871) dan *underweight*/normal (r=0,880), serta kelompok merokok (r=0,794) dan tidak merokok (r=0,901), seluruhnya p<0,001. Analisis ketepatan diagnostik pada 27 subjek menunjukkan sensitivitas 92,3%, spesifisitas 64,3%, dan akurasi 77,8%.

Kesimpulan: Derajat kalsifikasi arkus aorta pada radiografi toraks memiliki korelasi positif kuat dengan CAC *Score* pada pasien UAP dan hubungan tersebut tetap kuat setelah penyesuaian berbagai faktor risiko.

Kata kunci: *Angina, Unstable*; *Vascular Calcification*; *Aorta, Thoracic*; *Radiography, Thoracic*; *Tomography, X-Ray Computed*.

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CORRELATION BETWEEN THE DEGREE OF AORTIC ARCH CALCIFICATION ON CHEST RADIOGRAPHY AND CORONARY ARTERY CALCIUM SCORE (CAC) SCORE ON CARDIAC CT IN PATIENTS WITH UNSTABLE ANGINA PECTORIS

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ABSTRACT

***Background**: Unstable angina pectoris (UAP) is a manifestation of acute coronary syndrome associated with coronary atherosclerosis. Calcification of the aortic arch and coronary arteries represents a manifestation of systemic atherosclerosis; thus, the grade of aortic arch calcification observed on chest radiography potentially reflects the coronary calcification burden assessed via the coronary artery calcium score* (CAC) *Score on cardiac CT.*

***Methods**: An observational analytic study with a cross sectional design utilizing retrospective secondary data was conducted on UAP patients undergoing cardiac CT at Dr. Sardjito General Hospital, Yogyakarta, between January 2024 and June 2026. A total of 52 subjects meeting the study criteria were selected via consecutive sampling. The grade of aortic arch calcification was assessed semi-quantitatively on chest radiographs (grades 0–3), while the* CAC *Score was calculated using the Agatston method on non-contrast, ECG-gated cardiac CT scans. The relationship between the two variables was analyzed using correlation tests, followed by stratified analysis to account for confounding factors.*

***Results**: The median age of the subjects was 63,5 (13,8) years, with 51.9% being male. Hypertension and dyslipidemia were present in 90.4% and 84.6% of subjects, respectively, while the prevalence of diabetes, smoking, and anemia was 36.5%, 38.5%, and 11.5%, respectively. A strong, significant positive correlation was observed between the degree of aortic arch calcification and the* CAC *Score ($r=0.873$; $p<0.001$). Stratified analysis revealed significant positive correlations among males ($r=0.832$) and females ($r=0.913$), the overweight/obese group ($r=0.871$) and the underweight/normal group ($r=0.880$), as well as the smoking group ($r=0.794$) and the non-smoking group ($r=0.901$); all showed $p<0.001$. Diagnostic accuracy analysis in 27 subjects demonstrated a sensitivity of 92.3%, a specificity of 64.3%, and an accuracy of 77.8%.*

***Conclusion**: The degree of aortic arch calcification on chest radiography shows a strong positive correlation with the* CAC *Score in patients with unstable angina pectoris (UAP), and this association remains strong after adjusting for various risk factors.*

***Keywords**: Angina, Unstable; Vascular Calcification; Aorta, Thoracic; Radiography, Thoracic; Tomography, X-Ray Computed.*