

**HUBUNGAN SUDUT BIFURKASI
LEFT MAIN CORONARY ARTERY DENGAN
STENOSIS ARTERI KORONER
MENGGUNAKAN CORONARY CT ANGIOGRAPHY**

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INTISARI

Latar Belakang dan Tujuan: *Coronary Computed Tomography Angiography* (CCTA) telah secara luas diakui sebagai modalitas tidak invasif yang paling efektif untuk mendiagnosa stenosis koroner dengan sensitivitas dan nilai prediksi negatif yang tinggi. Selain itu, CCTA dapat mengukur sudut bifurkasi *left main coronary artery* (LM) secara akurat. Sudut bifurkasi LM yang lebar menyebabkan turbulensi tinggi dan *shear stress* rendah di daerah percabangan yang mempengaruhi perkembangan plak di arteri koroner. Penelitian ini bertujuan untuk mengetahui hubungan antara sudut bifurkasi LM dengan stenosis arteri koroner menggunakan CCTA.

Metode: Penelitian observasional analitik, retrospektif, uji komparasi dengan menggunakan data sekunder CCTA, didapatkan 99 subjek penelitian (47 laki-laki, 52 perempuan, rerata usia $54,83 \pm 9,29$) dengan kecurigaan PJK. Pengukuran sudut bifurkasi dan penilaian stenosis LM dan/atau LAD atau LCX untuk mengetahui hubungan antara sudut bifurkasi LM dan terdapatnya stenosis.

Hasil: Terdapat 57 orang (57,6%) dengan stenosis dan 42 orang (42,4%) tidak stenosis di LM dan/atau LAD atau LCX. Rerata sudut bifurkasi LM $74,10^\circ \pm 21,80^\circ$ (rentang $30,89^\circ - 132,56^\circ$) dari semua subjek penelitian. Pada kelompok stenosis dan tidak stenosis didapatkan rerata sudut bifurkasi LM $74,68^\circ \pm 22,57^\circ$ (rentang $30,89^\circ - 132,56^\circ$) dan $73,30^\circ \pm 20,96^\circ$ (rentang $31,95^\circ - 119,93^\circ$), dengan perbedaan yang tidak signifikan ($p=0,757$). Dari total 297 arteri koroner didapatkan plak aterosklerosis pada 103 segmen arteri koroner dengan dominansi plak di LAD 50 (48,5%) LCX 32 (31,1%) dan LM 21 (20,4%).

Kesimpulan: Sudut bifurkasi LM lebih besar pada kelompok stenosis dibandingkan kelompok tidak stenosis tetapi tidak bermakna secara statistik ($p=0,757$). hal ini dikarenakan sudut bifurkasi LM hanya merupakan satu dari multipel faktor penyebab plak aterosklerosis. Walau demikian, sudut bifurkasi LM dapat menjadi peringatan dini risiko stenosis arteri koroner. Rerata sudut bifurkasi LM sesuai dengan rerata beberapa penelitian sebelumnya sehingga pengukuran sudut bifurkasi LM dengan CCTA dapat direkomendasikan dalam pemakaian praktik sehari-hari.

Kata kunci : Sudut bifurkasi, stenosis, *left main*, CCTA, PJK, aterosklerosis

COMPARISON OF THE LEFT MAIN BIFURCATION ANGLE BETWEEN PATIENTS WITH NORMAL AND STENOSED LEFT CORONARY ARTERIES USING CORONARY CT ANGIOGRAPHY

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ABSTRACT

Background and Objective: Coronary Computed Tomography Angiography (CCTA) has been widely recognized as the most effective non-invasive modality for diagnosing coronary stenosis with high sensitivity and negative predictive value. In addition, the CCTA can measure the bifurcation angle of the left main coronary artery accurately. The wide angle of LM bifurcation causes high turbulence and low shear stress in the branching area, which affects the development of the coronary arteries. This study aims to determine the relationship between left main bifurcation angle and coronary artery stenosis using CCTA.

Materials and Methods A retrospective study of 99 patients with suspected CAD (47 men, 52 women, mean age 54.83 ± 9.29) between January 2019 and November 2020 was conducted. The left main bifurcation angle was measured and the present of lumen stenosis of LM and / or LAD or LCX was assessed to determine the relationship between the LM bifurcation angle and the presence of stenosis.

Results: The mean LM bifurcation angle was measured $74.10^\circ \pm 21.80^\circ$ (range 30.89° - 132.56°) among all patients. Plaques were present in the left coronary artery in 57 patients (57.6%) variable angulations. The mean bifurcation angle measured in patients with normal and lumen stenosis was $74.68^\circ \pm 22.57^\circ$ (range 30.89° - 132.56°) and $73.30^\circ \pm 20.96^\circ$ (range 31.95° - 119.93°), with no significant difference ($p = 0.757$). From a total of 297 coronary arteries, atherosclerotic plaques were found in 103 coronary artery segments with plaque dominance in LAD 50 (48.5%) LCX 32 (31.1%) and LM 21 (20.4%).

Conclusion: The LMBA is wider in stenosis group than in the normal group but it is not statistically significant ($p = 0.757$), which the reason due to multiple risk factors that co-influenced the proliferation of atherosclerosis, while LMBA is one of these factors. In particular this LMBA provides useful information regarding the high-risk patients and to prevent CAD-related events. The mean LMBA value is in accordance with several reports from prior studies, this result suggests that measurement of the LMBA can be recommended in routine clinical practice.

Keyword: Bifurcation angle, stenosis, *left main*, CCTA, CAD, atherosclerosis