

## Correlation of Serum Apelin Level with Coronary Calcium Score in Patients with Suspected Coronary Artery Disease

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**Abstract :** Introduction: A growing body of evidence indicates that apelin, a relatively recent member of the adipokines family, has a potential anti-atherogenic effect. An association between low serum apelin state and coronary artery disease (CAD) was previously reported; however, the relationship between apelin and the atherosclerotic burden was unclear. Objectives: Our aim was to explore the correlation of serum apelin level with coronary calcium score (CCS) as a quantitative marker of coronary atherosclerosis. Methods: This observational cross-sectional study enrolled 100 consecutive subjects referred for cardiac multi-detector computed tomography (MDCT) for assessment of CAD (mean age  $54 \pm 9.7$  years, 51 male and 49 females). Clinical parameters, glycemic and lipid profile, high sensitivity CRP (hsCRP), homeostasis model assessment of insulin resistance (HOMA-IR), serum creatinine and complete blood count were assessed. Serum apelin levels were determined using a commercially available Enzyme Immunoassay (EIA) Kit. High-resolution non-contrast CT images were acquired by a 64-row MDCT and CCS was calculated using the Agatston scoring method. Results: Forty-three percent of the studied subjects had positive coronary artery calcification (CAC). The mean CCS was  $79 \pm 196.5$  Agatston units. Subjects with detectable CAC had significantly higher fasting plasma glucose, HbA1c, and WBCs count than subjects without detectable CAC ( $p < 0.05$ ). Most importantly, subjects with detectable CAC had significantly lower serum apelin level than subjects without CAC ( $1.3 \pm 0.4$  ng/ml vs.  $2.8 \pm 0.6$  ng/ml,  $p < 0.001$ ). In addition, there was a statistically significant inverse correlation between serum apelin levels and CCS ( $r = 0.591$ ,  $p < 0.001$ ); on multivariate analysis this correlation was found to be independent of traditional cardiovascular risk factors and hs-CRP. Conclusion: To the best of our knowledge, this is the first report of an independent association between apelin and CCS in patients with suspected CAD. Apelin emerges as a possible novel biomarker for CAD, but this result remains to be proved prospectively.

**Keywords :** HbA1c, apelin, adipokines, coronary calcium score (CCS), coronary artery disease (CAD)

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