

## Association between Abdominal Aortic Calcifications and Renal Calculi

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Cardiovascular diseases (CVD) remain a leading cause of death worldwide. Early diagnosis of the disease significantly reduces both morbidity and mortality. Abdominal aortic calcifications (AAC) is one of the valuable indicators in assessing coronary artery disease, a form of CVD. Research indicates a potential association between AAC and renal calculi formation, as individuals with renal stones show a higher incidence of AAC. Non-contrast computed tomography (NCCT) of the kidney-ureter-bladder (KUB) region and abdomen, commonly used for diagnosing renal calculi, has emerged as a practical tool for evaluating AAC as well. This retrospective case-control study aimed to assess the relationship between AAC and renal calculi by analyzing 852 NCCT images of KUB and abdomen performed between 1<sup>st</sup> of July 2023, and 1<sup>st</sup> November 2024, in two major hospitals in the Northern Province. The study population consisted of 426 cases with AAC and 426 controls without AAC, involving both male and female individuals aged 35 to 84 years. Each group was further categorized based on the presence or absence of renal calculi. Statistical analysis using the chi-square test and binary logistic regression was employed to explore the relationship between AAC and renal calculi. Interestingly, renal calculi were more prevalent among individuals without AAC (35.2%) compared to those with AAC (28.9%), and this difference was statistically significant ( $p = 0.047$ ). Logistic regression revealed that in individuals younger than 65 years, the presence of renal calculi was significantly associated with higher odds of AAC (OR = 1.428,  $p = 0.046$ ), suggesting a meaningful relationship in this age group. However, no significant association was found in individuals older than 65 years (OR = 1.073,  $p = 0.885$ ). Additionally, gender-based differences in AAC occurrence were not statistically significant (OR = 1.415,  $p = 0.063$ ). In conclusion, this study indicates that renal calculi are significantly associated with AAC among individuals under 65 years of age, while no such relationship is evident in older individuals. The results underscore the importance of further investigations using comprehensive and longitudinal study designs to better understand the clinical implications of this association and to enhance early detection strategies for cardiovascular conditions.

**Keywords:** Abdominal aortic calcifications, renal calculi, cardiovascular disease