3. Streszczenie w języku angielskim

Abdominal Aortic Aneurysm (AAA) represents a significant health issue and is one of the primary risk factors for sudden death caused by aortic rupture. This condition mainly affects older adults, especially men, and is often accompanied by a range of other chronic diseases, such as hypertension, diabetes, cardiovascular diseases, and chronic kidney disease (CKD). With advancements in medical technology, endovascular aneurysm repair (EVAR) has become the preferred treatment method for eligible patients. EVAR, being less invasive than traditional open surgery, is associated with a shorter hospital stay, reduced risk of perioperative complications, and faster recovery to normal activities.

However, one of the significant complications related to the EVAR procedure is the occurrence of acute kidney injury (AKI), which not only increases the risk of prolonged hospitalization but can also lead to chronic kidney disease and significantly impact long-term patient prognosis. AKI typically develops due to contrast load during imaging procedures, the patient's complex hemodynamic state, and potential tissue damage during the procedure itself. The impact of AKI on the outcomes of patients after EVAR is the subject of numerous studies, as kidney injury associated with this procedure is linked to increased mortality and decreased quality of life.

The occurrence of AKI in post-EVAR patients presents a clinical challenge, particularly in a population with additional comorbidities, such as type 2 diabetes, chronic obstructive pulmonary disease (COPD), and chronic kidney disease. Research indicates that these comorbidities may further worsen the prognosis for AAA patients, increasing the risk of postoperative complications and long-term mortality. Therefore, understanding and identifying the risk factors that may contribute to AKI and assessing their impact on long-term outcomes in post-EVAR patients are crucial.

This study aimed to investigate the incidence of acute kidney injury and its impact on mortality among patients undergoing endovascular repair for abdominal aortic aneurysm. A rigorous methodology was used, assessing the incidence of AKI within 48 hours post-surgery and its consequences over a two-year follow-up period.

The study group included 247 patients, with a final analysis of 192 carefully selected based on an AAA diagnosis and EVAR treatment between 2015 and 2021. This group consisted of 46 women and 146 men. The study thoroughly examined each patient's

medical history to identify existing comorbidities, allowing for an assessment of their potential impact on the incidence of AKI and mortality outcomes. The analysis also included patient demographics, such as age and gender, and a comprehensive examination of various comorbidities, including hypertension, type 2 diabetes, atrial fibrillation, chronic coronary artery disease, chronic obstructive pulmonary disease, and chronic kidney disease. Through detailed assessments at 48 hours post-contrast administration and during the two-year follow-up, the study aimed to clarify the complex relationship between AKI, patient characteristics, and long-term mortality outcomes in the context of AAA treatment.

The analysis of collected data revealed significant insights into the relationship between AKI incidence, patient demographics, aneurysm characteristics, and long-term mortality rates. The mean age of the study group was 73.3 ± 7.9 years, with a slightly higher average age among those affected by AKI at 74.9 ± 9.1 years. Interestingly, AKI occurred in 36 patients, representing 19% of the entire group, with a clear predominance among men, who accounted for 86.1% of AKI cases. Further analysis revealed a significant association between pre-existing CKD and AKI occurrence, with postoperative AKI occurring in 66.7% of patients with CKD.

Additionally, the study of aneurysm dimensions provided valuable information on the potential impact of aneurysm size on AKI incidence and mortality outcomes. The average aneurysm diameter in the patient population was 57.2 ± 17 mm. It was noted that patients with AKI had a larger average aneurysm diameter of 66.9 ± 19.7 mm, with a distinct critical threshold significantly increasing morbidity, identified at 67 mm. This finding highlights aneurysm diameter as a potential risk factor for adverse postoperative outcomes, warranting further investigation and consideration in clinical practice.

The two-year observation period also provided valuable information on the long-term implications of AKI for patient mortality rates. The overall mortality rate in this period was 16.7% (N=32), with patients with AKI demonstrating a significantly higher mortality rate of 38.9% (N=14). Similarly, patients with CKD had an elevated mortality rate of 34.3% (N=23), emphasizing the overlapping influence of comorbidities on long-term outcomes for operated patients. A sub-analysis of the data revealed interesting patterns, where patients exceeding the empirically determined critical aneurysm

diameter threshold of 67 mm had a mortality rate of 20% (N=6). Additionally, patients with type 2 diabetes experienced a substantial mortality rate of 37.9% (N=11), underscoring the complex relationship between metabolic factors and long-term survival outcomes.

This study underscores the significant role of AKI, type 2 diabetes, aneurysm size, and preoperative CKD as multidimensional variables closely associated with higher mortality rates in the context of EVAR for AAA. These data reveal the complex interplay between patient characteristics, aneurysm morphology, and postoperative outcomes, highlighting the need for a comprehensive approach to patient management. Recognizing and addressing these key factors during both preoperative assessment and postoperative care is crucial for patients undergoing endovascular treatment for AAA, reducing adverse outcomes and improving long-term survival rates.