OPTIMIZATION OF OUTCOMES OF PERCUTANEOUS CORONARY INTERVENTIONS IN PATIENTS WITH CORONARY ARTERY DISEASE AND CHRONIC KIDNEY DISEASE

Mahmudbekov M.O.
Scientific Advisor, Doctor of Medical Sciences, Professor:
Zufarov M.M.
The Republican Specialized Scientific and Practical Medical Center for Surgery named after Academician V. Vakhidov
https://doi.org/10.5281/zenodo.16869525

Relevance

Coronary artery disease (CAD) and chronic kidney disease (CKD) are two major conditions frequently encountered in clinical practice, particularly among elderly patients. According to multiple studies, approximately 30–40% of patients with CKD also suffer from CAD, while up to 50% of CAD patients exhibit signs of CKD. CKD significantly increases the risk of developing CAD, especially in advanced stages, where cardiovascular morbidity is 2–4 times higher compared to individuals with normal renal function. Patients with concurrent CAD and CKD often present with increased arterial hypertension, dyslipidemia, systemic inflammation, water-electrolyte imbalance, and elevated liver and kidney enzyme levels. Performing percutaneous coronary intervention (PCI) in such patients requires an integrated approach, taking into account drug interactions, renal protection strategies, and careful monitoring of blood pressure, serum urea, creatinine, and glucose. Despite the clinical importance, there is still a lack of research focused on the impact of CKD on PCI outcomes, particularly in the Uzbek population.

Objective

To improve outcomes and refine diagnostic strategies and PCI approaches in patients with CAD and concurrent CKD.

Materials and Methods

The study included 100 patients diagnosed with CAD and CKD who underwent various types of PCI at the Department of Interventional Cardiac Surgery of the Republican Specialized Scientific-Practical Medical Center of Surgery named after acad. V. Vakhidov between 2022 and 2024. Diagnostic evaluation included ECG, echocardiography, treadmill stress testing, laboratory tests (complete blood count, biochemical profile, serum cTnI, creatinine clearance via the Robert test, natriuretic peptides BNP and NT-proBNP, and coagulation profile). Both immediate and long-term outcomes were assessed, along with the role of hemodialysis therapy in pre- and post-procedural management.

Results

Of the studied patients, 46% were in CKD stage 3, 28% in stage 2, 18% in stage 4, and 8% in stage 5. The mean patient age was 64 years. PCI success rates exceeded 95%, with contrast-induced nephropathy (CIN) occurring in 9% of cases, predominantly among those with advanced CKD stages. Hemodialysis was required in 6% of patients post-PCI, primarily in stage 5 CKD. The study identified key risk factors for CKD exacerbation after PCI, including high contrast volume, pre-existing anemia, and uncontrolled hypertension.

Conclusion

PCI in patients with CAD and CKD presents significant challenges due to the increased risk of renal complications and cardiovascular events. Optimization of outcomes requires a multidisciplinary approach involving both cardiologists and nephrologists, minimization of contrast use, individualized peri-procedural care, and strict post-procedural monitoring. The developed diagnostic and interventional algorithm can improve patient prognosis and quality of life, especially in the Uzbek population where specific clinical characteristics may influence outcomes.

References:
Используемая литература:
Foydalanilgan adabiyotlar:

1. Go AS, Chertow GM, Fan D, et al. Chronic kidney disease and the risks of death, cardiovascular events, and hospitalization. N Engl J Med. 2004;351(13):1296-1305.
2. Leon MB, Baim DS, Popma JJ, et al. A clinical trial comparing three antithrombotic-drug regimens after coronary-artery stenting. N Engl J Med. 1998;339(23):1665-1671.
3. McCullough PA, Wolyn R, Rocher LL, et al. Acute renal failure after coronary intervention: incidence, risk factors, and relationship to mortality. Am J Med. 1997;103(5):368-375.
4. National Kidney Foundation. KDOQI Clinical Practice Guidelines for Chronic Kidney Disease. Am J Kidney Dis. 2002;39(2 Suppl 1):S1-S266.