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POSTOPERATIVE DELIRIUM IN CABG PATIENTS: IDENTIFYING RISKS AND OPTIMIZING PERIOPERATIVE MANAGEMENT

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Introduction. Postoperative delirium (POD) in patients undergoing coronary artery bypass graft (CABG) surgery is a multifaceted issue influenced by various risk factors and necessitating comprehensive management strategies. Preoperative anxiety and depressive symptoms (ADS) have been identified as significant predictors of POD, with studies showing that patients with these psychological conditions are more likely to experience delirium, leading to prolonged hospital stays and increased healthcare costs(AbuRuz & Maloh, 2024). The pathophysiology of POD involves complex neurobiological interactions, including neuroinflammatory processes and neurotransmitter imbalances, which are exacerbated by factors such as advanced age, preexisting cognitive impairments, and the type and duration of surgery(Paunikar & Chakole, 2024). In frail elderly patients, additional risk factors such as frailty, lower preoperative cognitive scores, and longer operation times have been highlighted, with frailty and operation time showing high predictive value for POD(Ding et al., 2024). Non-pharmacological management strategies, particularly within perioperative geriatric services, emphasize the importance of cognitive and psychological assessments to mitigate the risk of delirium and improve patient outcomes(Travers et al., 2024). Pharmacological interventions, including the use of antipsychotics, alongside non-pharmacological approaches like environmental modifications and cognitive rehabilitation, are crucial in managing POD(Paunikar & Chakole, 2024).

Purpose of the study. This study aims to evaluate the incidence of POD in CABG patients, analyze contributing factors, and assess the effectiveness of perioperative management strategies.

Materials and Methods: A retrospective study was conducted at the Fergana Regional Branch of the Republican Specialized Scientific Practical Medical Center of Cardiology. Forty-two patients who underwent CABG were divided into two groups: Main Group (n=21): Received a comprehensive delirium prevention protocol, including multimodal anesthesia, optimized hemodynamic management, and early postoperative mobilization. Control Group (n=21): Standard postoperative care was administered. Patients were assessed using the Confusion Assessment Method for ICU (CAM-ICU), Mini-Mental State Examination (MMSE), and laboratory and instrumental

diagnostics, including inflammatory markers (CRP, IL-6), EEG, and cerebral oxygen saturation (rSO_2).

Results and Discussion. Incidence of POD: The main group exhibited a significantly lower POD incidence (14.3%) compared to the control group (42.9%) ($p < 0.05$).

Inflammatory Markers: CRP and IL-6 levels were significantly higher in patients who developed POD, with mean CRP levels of 14.2 ± 3.1 mg/L in the POD group vs. 7.8 ± 2.5 mg/L in non-POD patients ($p < 0.01$).

Cerebral Oxygenation: Patients with POD had lower postoperative rSO_2 values (mean 56.4 ± 5.7%) compared to non-POD patients (mean 65.1 ± 4.8%) ($p < 0.05$), indicating a potential role of perioperative cerebral hypoxia in POD development.

MMSE Scores: Patients who developed POD showed a significant postoperative decline in MMSE scores (preoperative 26.8 ± 1.9, postoperative 21.4 ± 2.3, $p < 0.05$).

These findings highlight the importance of inflammatory control, cerebral perfusion monitoring, and cognitive function preservation in reducing POD risk.

Conclusion. POD remains a significant concern in CABG patients, particularly those with preexisting cognitive impairment and inflammatory markers. Optimized perioperative management, including multimodal anesthesia, hemodynamic stability, and cerebral perfusion monitoring, can significantly reduce POD incidence. Recommendations for Cardioanesthesiologists

1. Implement multimodal anesthesia and hemodynamic optimization to minimize fluctuations in cerebral perfusion and reduce neuroinflammation.
2. Use cerebral oximetry (NIRS) and inflammatory markers (CRP, IL-6) for early risk stratification and targeted interventions to improve postoperative outcomes.

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