Postoperative anemia

Anemia after surgery is common and is associated with adverse clinical outcomes. Understanding the incidence and risk factors for postoperative anemia is important to reduce anemia-related complications and blood transfusion. There is lack of data regarding postoperative anemia and its contributing factors in neurosurgery.

Pediatric neurosurgery carry a considerable risk of intraoperative bleeding and, subsequently, anemia in the post-operative period. Postoperative anemia is often multifactorial with several factors contributing to its occurrence.

Naik et al. aims to quantify the incidence of postoperative anemia, identify potential risk factors, and assess the impact of post-operative anemia on clinical outcomes in the pediatric neurosurgery population.

This was a single-center and retrospective cohort study which included children <18 years of age undergoing elective neurosurgery. The data were extracted from the electronic and physical patient health records. Post-operative anemia was defined for this study as a hemoglobin value below 10 g/dL at any time up to 3 days after surgery.

A total of 300 children were recruited during the study period. The incidence of post-operative anemia after elective pediatric neurosurgery was 21.33%. Children in the post-operative anemia group were younger (P = 0.004), had lower pre-operative hemoglobin values (P < 0.001), belonged to higher American Society of Anesthesiologists (ASA) physical status (P = 0.023), underwent predominantly supratentorial (P = 0.041) and non-tumor surgeries (0.004), and received lesser intraoperative blood

transfusion (P = 0.010) compared to no post-operative anemia group. The factors that remained predictive of post-operative anemia on multivariate analysis were ASA physical status (P = 0.018, odds ratio [OR] = 1.94, 95% confidence interval [CI] of 1.12-3.36), pre-operative hemoglobin (P < 0.001, OR = 0.64, 95% CI of 0.50-0.82), and intraoperative transfusion (P = 0.028, OR = 0.45, 95% CI of 0.22-0.92).

Optimization of modifiable risk factors is essential to reduce the occurrence of post-operative anemia and improve outcomes in pediatric neurosurgical patients [1]

A single centre, retrospective study of patients who underwent elective neurosurgery over seven months. Data regarding age, gender, body mass index, American Society of Anesthesiologists (ASA) physical status, diagnosis, surgery, preoperative hemoglobin, surgery duration, intraoperative blood loss and red blood cell (RBC) transfusion, dose of tranexamic acid, intraoperative fluid balance, years of surgeon's experience, postoperative hemoglobin, postoperative RBC transfusion, Glasgow Coma Scale (GCS) score at hospital discharge, and duration of postoperative intensive care unit and hospital stay were collected. Logistic regression was used to identify predictors of postoperative anemia.

The incidence of postoperative anemia was 11.3% (116/1025). On univariate analysis; age, preoperative hemoglobin, surgery duration, gender, ASA grade, surgery type, and surgeon's experience were associated with postoperative anemia. Lower preoperative hemoglobin (p<0.001) and non-tumor surgery (p<0.001) were predictive of postoperative anemia on multivariate analysis. Postoperative anemia resulted in increased RBC transfusion (p<0.001) and lower GCS score at discharge (p=0.012).

At least one in ten patients undergoing elective neurosurgery develop postoperative anemia. Lower preoperative hemoglobin and non-tumor surgery predict anemia. Anemia results in increased RBC transfusion and lower discharge GCS score [2].

[1]

Naik S, Nirale A, Bharadwaj S, Sangeetha RP, Shukla D, Kamath S. Post-operative anemia in children undergoing elective neurosurgery: An analysis of incidence, risk factors, and outcomes. J Neurosci Rural Pract. 2024 Jan-Mar;15(1):29-33. doi: 10.25259/JNRP_338_2023. Epub 2023 Aug 12. PMID: 38476436; PMCID: PMC10927067.

[2]

Giribabu P, Karan N, Sriganesh K, Shukla D, Devi BI. Incidence, risk factors and impact of anemia after elective neurosurgery: A retrospective cohort study. World Neurosurg X. 2024 Feb 24;22:100289. doi: 10.1016/j.wnsx.2024.100289. PMID: 38444872; PMCID: PMC10914572.

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