Acta Neurochir (Wien). 2023 Mar 6. doi: 10.1007/s00701-023-05541-6. Online ahead of print.

Characterization of perioperative glycemic status and dexamethasone use with associated postoperative complications in glioblastoma patients

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PMID: 36879101 DOI: 10.1007/s00701-023-05541-6

Abstract

Purpose: Postoperative morbidity in glioblastoma (GBM) patients can be due to the disease course but can also come from postoperative complications. Our objective was to study the association of dexamethasone use and perioperative hyperglycemia with postoperative complications in GBM patients.

Methods: A single-center, retrospective cohort study was conducted in patients who underwent surgery for primary GBM from 2014-2018. Patients with perioperative fasting blood glucose (FBG) measurements and adequate follow-up to assess for complications were included.

Results: A total of 199 patients were included. More than half (53%) had poor perioperative glycemic control (FBG \geq 7 mM for \geq 20% perioperative days). Higher dexamethasone dose (\geq 8 mg) was associated with higher FBG on postoperative days 2-4 and 5 (p = 0.02,0.05,0.004,0.02, respectively). Poor glycemic control was associated with increased odds of 30-day any complication and 30-day infection on univariate analysis (UVA), and 30-day any complication and increased length of stay (LOS) on multivariate analysis (MVA). Higher average perioperative daily dexamethasone dose was associated with increased odds of 30-day any complication on MVA. Elevated hemoglobin A1c (HgbA1c, \geq 6.5%) was associated with increased odds of 30-day any complication,

30-day infection, and LOS on UVA. In a multivariate linear regression model, only the diagnosis of diabetes mellitus predicted perioperative hyperglycemia.

Conclusions: Perioperative hyperglycemia, higher average dexamethasone use and elevated preoperative HgbA1c are associated with increased risk of postoperative complications in GBM patients. Avoiding hyperglycemia and limiting dexamethasone use in postoperative period may decrease the risk of complications. Select HgbA1c screening may allow the identification of a group of patients at higher risk of complications.

Keywords: Dexamethasone; Glioblastoma; Glycemic control; Perioperative care; Postoperative complications.

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