# Postoperative vomiting

Postoperative nausea and vomiting (PONV) is common in patients after craniotomy and may lead to severe postoperative complications.

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Postoperative nausea and vomiting are common in patients receiving microvascular decompression. Hou et al. examined whether postoperative nausea and vomiting are associated with reduced intraocular pressure (IOP) after microvascular decompression, a measure that reflects intracranial pressure.

In this prospective cohort study. Adult patients scheduled for microvascular decompression surgery for hemifacial spasms between January 2020 and August 2020 were eligible. IOP was measured immediately before anesthesia induction and 30 min after patients regained complete consciousness using non-contact tonometry. IOP reduction was defined by at least a 1 mmHg decrease vs. preoperative baseline. The primary outcome was vomiting on postoperative day 1.

A total of 103 subjects were enrolled. IOP was reduced in 56 (54.4%) subjects. A significantly greater proportion of patients with IOP reduction had vomiting on postoperative day 1 (51.8% (29/56) vs. 23.4% (11/47) in those without IOP reduction; p = 0.003). In the multivariate regression analysis, vomiting on postoperative day 1 was associated with female sex [odds ratio = 7.87, 95% CI: 2.35-26.32, p = 0.001] and IOP reduction [odds ratio = 2.93, 95% CI: 1.13-7.58, p = 0.027].

In patients undergoing microvascular decompression surgery, postoperative IOP reduction is associated with postoperative vomiting.

Trial registration: Chinese Clinical Trial Registry: ChiCTR2000029083 . Registered 13 January 2020 [1)].

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A prospective observational study involved 240 patients who had undergone elective surgeries at the N.N. Burdenko National Scientific and Practical Center for Neurosurgery between July and November 2017. The data were collected from the questionnaires filled out by the patients during the first 48 h after the surgery and from patients' medical records.

The overall rate of PONV was 39.6%. Thirty-six out of 53 (68%) patients developed PONV after the posterior fossa surgeries. The risk of PONV in this group was significantly higher ($p<0.05$) compared to the rate of PONV after interventions at a different location. The rate of PONV after treatment of extracranial pathology was ~10.5%; for a different location, it was as high as 32-37%. Intraoperative dexamethasone was used in 156 (65%) patients; in this group, the rate of PONV was 39.9%. Patients received ondansetron at a dose of 8 mg for a preventive purpose at the end of the surgery. A total of 162 patients were given the drug; 59 (36.4%) of them developed POTV during 48 h post-administration. Seventy-eight patients did not receive ondansetron. Thirty-six of them (46.2%) ($p>0.05$) developed POTV. The rate of POTV assessed during the first 8 h after surgery was 22.8% in patients who had received ondansetron and 37.2% in those who had not received it ($p<0.05$). Patients who had not intraoperatively received a combination of these drugs developed POTV in 55 (45%) cases ($p>0.05$).

The problem associated in POTV remains topical in neurosurgery. The current approaches are not

absolutely effective for prevention of POTV, whose rate ranges between 10.5 and 68% depending on surgery location. Further studies focused on administration of NK-1 receptor antagonists and electrical stimulation of the median nerve are needed to enhance the effectiveness of POTV prevention [2].

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The aim of a study was to identify risk factors and postoperative complications associated with PONV in the context of perioperative high-dose dexamethasone administration.

In this prospective single-center study, all patients planned for elective craniotomy for supra- and infratentorial lesions were eligible to be included. Any PONV in a 24-hour period after craniotomy was recorded and analyzed with regard to time to postoperative complications and the administration of perioperatively administered high-dose dexamethasone.

The overall PONV rate of 421 patients during a 9-month period was 18.1% (76 patients). Multivariate analysis revealed a significant association of PONV with female sex, infratentorial localization, age, and history of PONV. There was no association between PONV and postoperative complications such as intracranial hemorrhage, cerebrospinal fluid (CSF) leaks, or pneumonia. Perioperative administration of high-dose dexamethasone for prophylactic prevention of edema was the only significant risk factor for postoperative complications (odds ratio [OR]: 3.34; confidence interval [CI], 1.39-8.05; $p < 0.01$) with a highly significant association with the occurrence of CSF leaks (OR: 6.85; CI, 1.62-29.05; $p < 0.01$).

The low PONV rate of 18.1% in this study may be the result of the frequent perioperative administration of high-dose dexamethasone for the prevention of edema. Our data indicate that perioperative high-dose dexamethasone is significantly associated with CSF leaks and can therefore not be recommended on a regular basis [3].

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2)
Klyukin MI, Kulikov AS, Lubnin AY. [Postoperative nausea and vomiting in neurosurgery: the approaches are varied but the problem remains unsolved]. Zh Vopr Neirokhir Im N N Burdenko. 2019;83(2):93-100. doi: 10.17116/neiro20198302193. Russian. PubMed PMID: 31166323.
3)
Burkhardt T, Czorlich P, Mende KC, Treitz A, Kiefmann R, Westphal M, Schmidt NO. Postoperative Nausea and Vomiting Following Craniotomy: Risk Factors and Complications in Context of Perioperative High-dose Dexamethasone Application. J Neurol Surg A Cent Eur Neurosurg. 2019 May 10. doi: 10.1055/s-0039-1685194. [Epub ahead of print] PubMed PMID: 31075810.