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“Bitter Taste Sensitivity and Post-Operative Nausea and Vomiting (PONV) in Females Diagnosed with Breast Cancer”

Post-operative nausea and vomiting (PONV) occurs in up to 30% of the general population, with incidence increasing to up to 70% in high-risk patients. High-risk individuals include women, nonsmokers, people with a history of motion sickness, and young-aged patients. For many, the discomfort of PONV is even worse than that of their general post-surgical pain. Being that most breast cancer patients are female, they already possess one risk factor for PONV, so it is crucial to identify other risk factors to provide them with the necessary management options to prevent PONV. One possible additional risk factor is bitter taste sensitivity. Bitter taste is predominantly mediated by the Taste 2 Receptor Member 38 (TAS2R38) gene. Studies have found TAS2 receptors (e.g. TAS2R38) in the gastrointestinal tract, providing a possible link between bitter taste and nausea and vomiting. This study aimed to investigate whether bitter taste sensitivity would reliably predict if females undergoing reconstructive breast surgery following a diagnosis of breast cancer would experience PONV. We hypothesized that increased bitter taste sensitivity would result in an increased incidence of PONV. To test this hypothesis, we recruited adult female patients ($n=42$, 53.5 ± 8.7 years) with a breast cancer diagnosis from the Center for Restorative Breast Surgery in New Orleans, Louisiana. During their preoperative visits, participants were given a brief survey, including questions about demographics, liking of a variety of foods, and other factors that may impact taste sensitivities. Most participants self-identified as white (90.5%), post-menopausal (71.4%) women, who reported no smoking history (90.4%), no antibiotic use (92.9%), no allergy medication use (66.7%) and underwent routine dental cleanings (97.6%). Approximately half of the women had previously undergone chemotherapy (52.4%). Participants were then given a series of bitter taste strips and asked first whether they detected a taste, and if so, to report its strength. The majority of participants reported that they detected a taste for Phenylthiocarbamide (PTC) (78.6%), sodium benzoate (76.1%), and thiourea (85.7%). Categorization as a bitter non-taster, normal taster or super taster is most often associated with the PTC strip. In the current study, 21.4% were categorized as non-tasters, 40.5% as normal tasters and 38.1% as super-tasters. On the day of surgery, participants were asked to report history of motion sickness (51.2%) and history of PONV (41.5%). Prior to surgery, participants were either given a scopolamine patch (80.5%) or Aponvie medication (19.5%) plus intraoperative antiemetics (100%) as preventative measures against PONV. PONV occurred in 17.0% of participants, who subsequently received antiemetic treatment. Ongoing analyses are examining the relationship between PONV, bitter taste sensitivity, and additional contributing factors.