

Current Approaches in Nausea and Vomiting Management in Children Undergoing Chemotherapy

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Despite advances in the treatment of nausea and vomiting in children receiving chemotherapy, nausea and vomiting remains the most important treatment side effect in children. This undesirable side effect significantly affects the quality of life of the child and the caregiving parents, compliance of the child to the treatment, course of the treatment, psychological well-being of the child, treatment process, compliance of the treatment and coping level of the caregiving parents. For this reason, pediatric oncology nurses are the professionals who interact and provide direct care to the child receiving cancer treatment; It has important roles and responsibilities in providing the necessary care, guidance, support and complementary interventions to alleviate unwanted side effects and minimizing the symptoms seen in the child. Pediatric oncology nurses; evaluate the child's treatment protocol, the emotogenicity of the given protocols, the effects on the child, the previous experiences of the child with nausea and vomiting through detailed evaluation criteria and follow the evidence-based care guidelines, evaluation criteria, algorithms and nursing interventions, planned pharmacological treatment, side effects. In addition, pharmacological methods should be supported by non-pharmacological methods according to current evidence-based guidelines. It should support nursing care with established non-pharmacological modalities that are effective in preventing nausea and vomiting in children, and should follow current randomized controlled trials evaluating their efficacy and integrate them into their clinical trials. It is also recommended that pediatric oncology nurses plan follow-up studies, longitudinal studies and randomized controlled experimental studies evaluating the effectiveness of non-pharmacological interventions for nausea and vomiting in children. In this review, current approaches to nausea and vomiting in children receiving chemotherapy were evaluated.

Keywords: *Nausea and vomiting, nursing practices, chemotherapy, pediatric oncology, symptom management*

Introduction

Nowadays, nausea and vomiting is one of the most common symptoms experienced by children in the treatment of childhood cancers despite the improvements and improvements in antiemetic treatment protocols in the treatment approaches of childhood cancers (1,2). Nausea is a subjective experience characterized by possible vomiting (emesis), although severe nausea can occur even before vomiting occurs prior to vomiting. Vomiting is characterized by expulsion of the gastric contents together with the retching reflex (3,4). Since nausea is a subjective experience, it is difficult to manage in the treatment of childhood cancers, and the incidence in children receiving cancer treatment varies between 40% and 70% (4,5). The incidence varies according to the factors associated with the child and the echogenicity of the chemotherapeutic agent included in the child's treatment protocol (3,4,5,6). The aim of management of nausea and vomiting in children nausea and vomiting that is to prevent the occurrence of symptoms (1,6). The pharmacological methods used for this should be evidence-based and supported by non-pharmacological interventions (1,5-6). Methods used in symptom management to reduce / prevent nausea and vomiting in children; pharmacological methods and non-pharmacological interventions that should be evidence-based (1,5-6). As a pharmacological treatment antiemetic

drug prophylaxis is widely used in the control of nausea and vomiting in children undergoing chemotherapy. (1,6). Antiemetics are given individually or in combination according to the level of chemotherapeutic agents received by the child and the severity of nausea and vomiting in the child (1, 4-6).

In 2016, MASSC / ESMO proposed an updated consensus to prevent nausea and vomiting due to acute chemotherapy in children; Acute nausea and vomiting prophylaxis is recommended for children receiving chemotherapy drugs with low emetogenic effect, 5-HT₃ antagonists, and 5-HT₃ antagonist ± dexamethasone ± aprepitant for those with chemotherapy treatment with moderate and high emetogenic effect (5). In the management of nausea and vomiting in children, it can be used alone in combination with pharmacological treatments in non-pharmacological interventions and mild nausea and vomiting in expectant nausea and vomiting (1,6). Non-pharmacological interventions recommended by the Oncology Nursing Society (ONS) to prevent nausea and vomiting in children include; massage-aromatherapy, cognitive behavioral therapies, guided imagery, ginger, progressive muscle relaxation, psychoeducation, acupuncture-acupressure, yoga, mind-body-based practices, animal assisted therapy, music therapy and art therapy (8). In a randomized controlled clinical study in which Varejeo and Santo (2019) evaluated the effect of laser acupuncture on nausea and vomiting in 17 children diagnosed with cancer aged 6-17 years receiving chemotherapy; concluded that laser acupuncture was effective in relieving nausea within 5 days of receiving chemotherapy and reducing vomiting episodes (number of attacks) on days 2 and 3 after chemotherapy (9). Evans et al., (2018) in a randomized controlled trial of placebo (water) and control (Johnson's baby shampoo) groups in which 49 children with cancer evaluated the benefits of ginger essential oil and inhaled aromatherapy to reduce nausea caused by chemotherapy; Ginger inhaled aromatherapy had no significant effect on reducing nausea and there was no significant difference in PeNAT scores between the three groups (10). Lown et al. (2019), in a randomized controlled trial protocol, evaluated the feasibility and efficacy of acupressure intervention to reduce treatment-related symptoms in 58 children and their parents receiving chemotherapy or chemotherapy-based hematopoietic cell transplantation; main result: reduction of nausea and vomiting for the child. Secondary outcomes: effect on pain, fatigue, depression, anxiety in children. Parental results: Depression, anxiety, post-traumatic stress symptoms, caregiver self-efficacy will be evaluated (11).

Dupis et al. (2018) compared acupressure wrist bands with standard antiemetic agents in children between 4 and 18 years of age using high emetic chemotherapy compared to the control group in acute phase and delayed phase chemotherapy-induced nausea intensity and acute and delayed phase controlled chemotherapy-induced vomiting in controlled studies; It was stated that acupressure bands had no significant effect on reducing the severity of nausea caused by chemotherapy in acute phase and delayed phase and as a result acupuncture bands were safe but had no effect on nausea or vomiting caused by chemotherapy in pediatric patients receiving high emetic chemotherapy (12). According to American Cancer Society (ACS) recommendations for nausea and vomiting in children (13);

To ensure that the foods consumed are cold or at room temperature to reduce the smell and taste,

In case of nausea, consuming fluid by sipping, avoiding fluid intake in meals,

Preference of clear liquids and cold consumption of these liquids slowly (ginger ale, apple juice, grape juice, cranberry juice),

Feeding with small and frequent small snacks throughout the day,

Stick ice creams, ginger ice chips,lemon, mint to help get rid of bad flavors, such as pungent and pleasant smells containing sugar-less hard candies,

Consuming dry and light foods such as toast, crackers, Rice, dry cereals, etc.

Taking calorie foods (pudding, fruit yoghurt, milkshakes) which are easy to eat several times a day,

Making nutritional arrangements to prevent nutritional intolerance after nutrition,

Determining the nutrition preferences of the child and providing the possible opportunities,

Conducting activity programs to prevent sudden post-meal changes,

Taking care of oral care,

In addition to the antiemetic regimen, it is possible to perform other activities such as listening to music, playing games, exercising and reading books during and after chemotherapy treatment (13).

Conclusion

Pediatric oncology nurses should evaluate the treatment protocol of the child, the emotogenicity of the given protocols, the effects on the child, and the experiences of the child for nausea and vomiting and plan the current evidence-based care guidelines, evaluation criteria, algorithms and nursing interventions. Pediatric oncology nurses have important responsibilities in symptom management and providing holistic care. Pediatric oncology nurses should evaluate the treatment received by the child from the beginning of the treatment process, objectively and subjectively (based on the child's self-report), through assessment criteria, based on previous experiences.

References

- 1 Ruggiero, A., Rizzo, D., Catalano, M., Coccia, P., Triarico, S., Attinà, G. (2018). *Acute chemotherapy-induced nausea and vomiting in children with cancer: Still waiting for a common consensus on treatment. Journal of International Medical Research*, 46(6), 2149-2156.
- 2 Duncan, C. N., Talano, J.-A. M., & McArthur, J. A. (2019). *Critical Care of the Pediatric Immunocompromised Hematology/Oncology Patient: An Evidence-Based Guide*. Cham: Springer International Publishing Imprint, Springer.
- 3 Marcdante, K. J., & Kliegman, R. (2019). *Nelson essentials of pediatrics. (Oncology)*, 595-611. Retrieved from <https://www.clinicalkey.com/dura/browse/bookChapter/3-s2.0-C20160012640>
- 4 Hockenberry, M. J., & Rodgers, C. C. (2015). *Nausea, vomiting, anorexia, and fatigue. Pediatric psycho-oncology: A quick reference on the psychosocial dimensions of cancer symptom management*, 79.
- 5 Dupuis, L. L., Sung, L., Molassiotis, A., Orsey, A. D., Tissing, W., & van de Wetering, M. (2017). *2016 updated MASCC/ESMO consensus recommendations: prevention of acute chemotherapy-induced nausea and vomiting in children. Supportive care in cancer*, 25(1), 323-331.
- 6 Paw Cho Sing, E., Robinson, P. D., Flank, J., Holdsworth, M., Thackray, J., Freedman, J., Phillips, R. (2019). *Classification of the acute emetogenicity of chemotherapy in pediatric patients: A clinical practice guideline. Pediatric blood & cancer*, 66(5), e27646.
- 7 ONS. (2017). *Oncology Nursing Society. Pediatric chemotherapy-induced nausea and vomiting. Retrieved from https://www.ons.org/pep/chemotherapy-induced-nausea-and-vomiting-pediatric.*
- 8 Varejao, C. D. S., & Santo, F. H. D. E. (2019). *Laser Acupuncture for Relieving Nausea and Vomiting in Pediatric Patients Undergoing Chemotherapy: A Single-Blind Randomized Clinical Trial. Journal of Pediatric Oncology Nursing*, 36(1), 44-54.
- 8 Evans, A., Malvar, J., Garretson, C., Pedroja Kolovos, E., & Baron Nelson, M. (2018). *The use of aromatherapy to reduce chemotherapy-induced nausea in children with cancer: a randomized, double-blind, placebo-controlled trial. Journal of Pediatric Oncology Nursing*, 35(6), 392-398.
- 9 Lown, E. A., Banerjee, A., Vittinghoff, E., Dvorak, C. C., Hartogensis, W., Melton, A., ... & Morgan, M. (2019). *Acupressure to reduce treatment-related symptoms for children with cancer and recipients of hematopoietic stem cell transplant: protocol for a randomized controlled trial. Global advances in health and medicine*, 8, 2164956119870444.

- 10 Dupuis, L. L., Kelly, K. M., Krischer, J. P., Langevin, A. M., Tamura, R. N., Xu, P., ... & Hendershot, E. (2018). Acupressure bands do not improve chemotherapy-induced nausea control in pediatric patients receiving highly emetogenic chemotherapy: A single-blinded, randomized controlled trial. *Cancer*, 124(6), 1188-1196.
- 11 ACS. (2019). Nausea and Vomiting. Retrieved from <https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/nausea-and-vomiting.html>