Ondansetron for Chemotherapy-Induced Nausea and Vomiting in Pediatric Patients: A Review

Context
Chemotherapy-induced nausea and vomiting (CINV) is a common side effect of chemotherapy for the treatment of cancer. Children are especially prone to vomiting with chemotherapy — a distressing side effect that can significantly reduce their quality of life and their willingness to continue with recommended treatments. The incidence of CINV depends on many factors, the most important being the type of chemotherapeutic drug(s) being used; but the incidence rate can be upward of 90% of the patients receiving chemotherapy (if drugs used to prevent and treat CINV are not also given).

Technology
Medications used to prevent and treat nausea and vomiting are called antiemetics and there are many different classes available. Ondansetron is an antiemetic belonging to a class of drugs called 5-HT₃ antagonists. Other medications in this class include granisetron, dolasetron, tropisetron, and palonosetron. For patients receiving types of chemotherapy that are more likely to cause CINV, they are usually given ondansetron or another 5-HT₃ antagonist together with a corticosteroid (e.g., dexamethasone) in an effort to prevent and treat CINV.

Issue
The 5-HT₃ antagonists are useful medications for CINV. However, up to 30% of patients receiving chemotherapy may not respond to these drugs and they are not without side effects of their own, including headache, diarrhea, constipation, sedation, abdominal pain, and dizziness. They may also cause changes to the electricity of the heart in some patients, as can be seen on electrocardiogram, and this must be monitored. A review of the clinical effectiveness, safety, and harms of ondansetron for CINV in children and adolescents will help to inform clinical treatment decisions.

Methods
A limited literature search of key resources was conducted, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages
For CINV in children and adolescents:
- Ondansetron plus dexamethasone was more effective than ondansetron alone.
- It is uncertain whether ondansetron is more or less effective than granisetron (another 5-HT₃ antagonist).
- Palonosetron (another 5-HT₃ antagonist) may be more effective than ondansetron, but any difference may not be significant.

Ondansetron is recommended by evidence-based clinical guidelines as a treatment option for the control of CINV in children and adolescents.

Results
The literature search produced 226 citations of which 13 were deemed potentially relevant. An additional 5 articles were identified from the grey literature. Of these 18 reports, 6 met the criteria for inclusion in this review; 2 systematic reviews, 1 randomized controlled trial, 1 non-randomized study, and 2 evidence-based guidelines.

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