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Oncology Patient Evidence-Based Notes (OPEN): Antiemetics for Chemotherapy-Induced Nausea and Vomiting

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Introduction

Oncology Patient Evidence-Based Notes (OPEN), the new format of this column, will present a clinical oncology question followed by a review and synopsis of a relevant evidence-based guideline.

Which antiemetic regimen will prevent or reduce acute and delayed nausea and emesis associated with chemotherapy administration?

Review of Evidence

Since the 1990s, new antiemetic agents have significantly reduced the incidence of nausea and vomiting associated with chemotherapy. Specifically, these agents are the serotonin receptor antagonists and consist of dolasetron (Anzamet®, Aventis Pharmaceuticals, Bridgewater, NJ), granisetron (Kytril®, Roche Pharmaceuticals, Nutley, NJ), ondansetron (Zofran®, GlaxoSmithKline, Research Triangle Park, NC), and tropisetron (Navoban®, Novartis Pharmaceuticals, Auckland, New Zealand [this product currently is not marketed in the United States]). A new class of agents, substance P/neurokinin 1 receptor antagonists, also is being used in combination with other antiemetics to prevent acute and delayed chemotherapy-induced nausea and vomiting. An example of this type of agent is aprepitant (Emend®, Merck & Co., Inc., Whitehouse Station, NJ).

As a result of the numerous agents now available, the American Society of Clinical Oncology developed an expert panel consisting of individuals from medical oncology, oncology nursing, radiation oncology, pediatric oncology, and oncologic pharmacy practice to review the literature on antiemetic therapy and create evidence-based clinical practice guidelines for the use of antiemetics during oncologic treatment (Gralla et al., 1999). A MEDLINE® literature search was performed by the panel using the following keywords or phrases: antiemetics, neoplasms, adverse effects, anticipatory plus nausea, anticipatory plus vomiting, serotonin antagonists, phenothiazines, butyrophenones, cannabinoids, corticosteroids, and metoclopramide. Based on the best available evidence and the panel's best clinical judgment, clinical guidelines with levels of evidence were developed. Level I is the strongest evidence and is composed of randomized, controlled trials or meta-analyses of well-designed, controlled trials. Level V is the weakest evidence and is composed of expert opinions or case reports (Agency for Health Care Policy and Research, 1994) (see Figure 1).

Acute Emesis

For acute emesis that occurs within 24 hours of chemotherapy administration, granisetron, ondansetron, dolasetron, and tropisetron have equivalent antiemetic activity when administered as a single dose according to the established, proven dosages and may produce similar side effects, including mild headache, transient asymptomatic transaminase elevations, and constipation (level of evidence: I). Oral agents, in comparison to agents administered via IV, have equivalent antiemetic effectiveness and are recommended because of their cost and convenience benefits (level of evidence: I). Corticosteroids, such as dexamethasone, methylprednisolone, or prednisone, have equivalent antiemetic activity (level of evidence: IV and expert consensus) and are recommended as a single-dose administration (level of evidence: II). Dexamethasone doses greater than 20 mg do not provide any additional antiemetic activity. Other classes of agents, such as metoclopramides, phenothiazines, butyrophenones, and cannobinoids, are not recommended as first-line antiemetic therapy for chemotherapy with high emetic risk (level of evidence: I). Benzodiazepines and antihistamines are not recommended as single agent antiemetics; however, benefit has been shown in combination with antiemetic drugs (level of evidence: II). The most effective combination of antiemetics is a corticosteroid and a serotonin receptor antagonist (level of evidence: I).

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