

Palonosetron: an evidence-based choice in prevention of nausea and vomiting induced by moderately emetogenic chemotherapy

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ABSTRACT

Aims and background. In 2003, the second-generation, 5-HT₃ receptor antagonist (5-HT₃ RA) palonosetron was approved by the FDA for the prevention of nausea and vomiting associated with highly and moderately emetogenic chemotherapy. We reviewed the current knowledge on the role of palonosetron against acute and delayed emesis in patients with solid tumors undergoing single-day moderately emetogenic chemotherapy regimens.

Methods. A literature review in PubMed was performed to update currently available preclinical and clinical evidence on palonosetron, prioritizing randomized clinical trials.

Results. The distinct pharmacology of palonosetron provides a rationale behind the improved efficacy observed with the drug in prevention of delayed symptoms. This may be explained by allosteric binding properties and by palonosetron-triggered receptor internalization, which result in prolonged inhibition of the 5-HT₃ receptor function. Very recent pharmacology experiments have also suggested that palonosetron would be able to differentially inhibit 5-HT₃/neurokinin 1 (NK-1) receptor signaling cross-talk. In two recent meta-analyses, palonosetron was shown to be more effective than other available 5-HT₃ RAs in preventing acute and delayed nausea and vomiting for both HEC and MEC. Recent findings also suggest that a single-day regimen of palonosetron plus dexamethasone (both drugs administered intravenously) may provide a reasonable therapeutic alternative to reduce the total dexamethasone dose administered in patients undergoing moderately emetogenic chemotherapy.

Conclusions. On the basis of accumulating data, the evidence-based international guidelines devised from the major organizations have been recently updated to recommend the use of palonosetron plus 3-day dexamethasone for the optimal prevention of nausea and vomiting due to moderately emetogenic chemotherapy. There is still a need to investigate the efficacy of palonosetron in combination with an NK-1 receptor antagonist and dexamethasone in well-designed randomized trials.

Key words: anti-emesis guidelines, CINV, moderately emetogenic chemotherapy, palonosetron.

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