As shown below in Fig. 1 and 2, for palono group, only 3% of patients showed acute nausea and vomiting, whereas 29.3% of patients showed acute vomiting and 74.6% showed acute nausea in grani group (p<0.0001) figures 1 and 2. While in Fig. 3 and 4, for palono group only 3% of patients reported acute nausea and vomiting in different degrees while in grani group 22% of patients showed acute vomiting and more than 29% reported acute nausea (p<0.0001).

**Abstract**

Chemotherapy-induced nausea and vomiting (CINV) is considered the main fear for both oncologists and patients. It affects quality of life dramatically, especially the food intake and nutritional values. This can be clearly observed in highly emetogenic chemotherapy (HEC) such as AC protocol in breast cancer patients. A recent study on breast cancer patients revealed the potential role of serotonin 3 (5-HT3) receptor antagonists in controlling CINV. Palonosetron plus dexamethasone is an effective combination in prophylaxis and treatment of CINV in both acute and delayed phase. On the other hand, granisetron is the only agent that induces acute vomiting and delayed nausea in a large percentage of patients. Our study demonstrates palonosetron in combination with dexamethasone is more effective than ganisetron and dexamethasone combination against both acute and delayed nausea induced by highly emetogenic cisplatin-based chemotherapy and highly emetogenic combination of cyclophosphamide and anthracyclines (AC).

Chemotherapeutic and patient characteristics are among the contributing factors, with the specific chemotherapeutic agent and dose administered probably the most significant risk factors for CINV. Agents with the highest emetogenic potential result in emesis during the first 24 h post-chemotherapy (acute CINV) in well over 90% of patients without antiemetic prophylaxis. Patient characteristics that increase the risk of CINV include female gender, younger age, previous exposure to chemotherapy, history of alcohol abstinence, and presence of nausea and vomiting with prior chemotherapy. Data control of acute CINV is an established predictor for delayed CINV that typically peaks in severity between days 2-4 post-chemotherapy, depending on the emetogenic profile of the agent used. Because 5-HT3 receptors are important neurotransmitters involved in CINV drugs that inhibit these receptors are commonly used in clinical practice. Among the various types of available anti-emetic agents, 5-HT3 receptor antagonists have been established as one of the most effective options for prevention of CINV due to their proven efficacy and low incidence of side effects compared with alternatives. This study is performed to compare the clinical outcome and the efficacy of two 5-HT3 receptor antagonists in preventing and managing of CINV. This might be due to unique pharmacokinetic properties of palonosetron as a second-generation 5-HT3 receptor antagonists such as prolonged half life and more affinity binding site in comparison with granisetron.

**Methodology**

Open-label randomized trial was carried out including 115 patients receiving at least 4 courses of highly emetogenic chemotherapy regimens. All patients received dexamethasone in combination with the serotonin receptor antagonist. Clinical and biochemical characteristics of patients were recorded, and blood samples were drawn to monitor serum substance P and serotonin in correlation with chemotherapy induced nausea and vomiting (CINV). MASCC antiemetic tool in acute phase (0hr-24hr) and delayed phase (24hr-120hr) was used to evaluate patient’s outcomes in both phases after each chemotherapy cycle.

**Introduction**

Chemotherapeutic and patient characteristics are among the contributing factors, with the specific chemotherapeutic agent and dose administered probably the most significant risk factors for CINV. Agents with the highest emetogenic potential result in emesis during the first 24 h post-chemotherapy (acute CINV) in well over 90% of patients without antiemetic prophylaxis. Patient characteristics that increase the risk of CINV include female gender, younger age, previous exposure to chemotherapy, history of alcohol abstinence, and presence of nausea and vomiting with prior chemotherapy. Data control of acute CINV is an established predictor for delayed CINV that typically peaks in severity between days 2-4 post-chemotherapy, depending on the emetogenic profile of the agent used. Because 5-HT3 receptors are important neurotransmitters involved in CINV drugs that inhibit these receptors are commonly used in clinical practice. Among the various types of available anti-emetic agents, 5-HT3 receptor antagonists have been established as one of the most effective options for prevention of CINV due to their proven efficacy and low incidence of side effects compared with alternatives. This study is performed to compare the clinical outcome and the efficacy of two 5-HT3 receptor antagonists in preventing and managing of CINV. This might be due to unique pharmacokinetic properties of palonosetron as a second-generation 5-HT3 receptor antagonists such as prolonged half life and more affinity binding site in comparison with granisetron.

**Results**

As shown below in Fig. 1 and 2, for palono group, only 3% of patients showed acute nausea and vomiting, whereas 29.3% of patients showed acute vomiting and 74.6% showed acute nausea in grani group (p<0.0001) figures 1 and 2. While in Fig. 3 and 4, for palono group only 3% of patients reported acute nausea and vomiting in different degrees while in grani group 22% of patients showed acute vomiting and more than 29% reported acute nausea (p<0.0001).

**Conclusion**

Our study demonstrates palonosetron in combination with dexamethasone is more effective than granisetron and dexamethasone combination against both acute and delayed nausea induced by highly emetogenic cisplatin-based chemotherapy and highly emetogenic combination of cyclophosphamide and anthracyclines (AC). We can recommend palonosetron plus dexamethasone as an effective combination in prophylaxis and treatment of CINV in both acute and delayed phase. Besides all previous, these results comply with many clinical trials performed in this approach and also MASCC and NCCN clinical practice guideline update 2016. In conclusion, both vomiting and nausea in the first week after chemotherapy remain a significant medical problem and more effort should be made by medical team members especially clinical pharmacy individuals in monitoring of therapy effectiveness and help other health care providers to achieve successful and reliable care plan.

**References**