Fosaprepitant: “The Good” – Antiemetic; “The Bad”- Hypersensitivity; “The Ugly”- Infusion Site Adverse Events/Phlebitis

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Fosaprepitant Dimeglumine (Emend ® for injection) is an intravenous medication commonly used as a pre-medication for chemotherapy regimens in combination with other antiemetics. It is used for the prevention of acute and delayed nausea and vomiting when administering moderate to high emetogenic chemotherapy regimens (Leal, et al., 2014). This medication is the intravenous form of the commonly known drug Aprepitant (Emend ®). “Fosaprepitant is a water soluble, phosphorylated analog of Aprepitant that is rapidly converted to Aprepitant after intravenous administration” (Sato et. al., 2014, p. 391). Fosaprepitant is a neurokinin receptor antagonist (NK1RA) (Sato et. al., 2014). This medication is given in conjunction with 5-hydroxytryptamine (5-HT3) receptor antagonist/serotonin receptor antagonist and dexamethasone. Fosaprepitant is a single dose medication. When administered via a central venous access device it is infused over 20 minutes, and when administered via a peripheral site, it is infused over 30 minutes. Some of the common side effects of Fosaprepitant are headache, weakness, constipation, diarrhea, abdominal pain, anorexia, dizziness and hiccups (Colon-Gonzalez & Kraft, 2010). This is a cost-effective antiemetic medication when compared to the 3-day oral Aprepitant antiemetic regimen. This is also a convenient option for patients, as it is administered prior to their chemotherapy in the infusion center rather than the patient self-
administering at their home. Medication compliance would not be a concern when the medication is administered in the infusion center.

**Infusion Site Adverse Events and Phlebitis**

Infusion site adverse events occur when the drug leaks outside of the vein. “Fosaprepitant infusion site adverse event details include erythema, induration, pain, swelling, thrombophlebitis, pruritus, vein discoloration, extravasation, or local reaction at the injection site” (Lundberg, 2014, p. 1314). The grading criteria for infusion site adverse events are grade 1-5. Grade 1 is tenderness with or without associated symptoms (i.e. warmth, erythema and itching). Grade 2 is pain at access site, lipodystrophy and/or edema and/or phlebitis. Grade 3 is ulceration or necrosis, severe tissue damage and operative intervention indicated. Grade 4 is life threatening consequences and urgent intervention indicated. Grade 5 is death (Lundberg, et al., 2014). Phlebitis can be defined as an inflammation of the vein which can be mechanical, chemical, or bacterial in origin (Ray-Barruel, Polit, Murfield & Rickard, 2013). Some of the symptoms of phlebitis are erythema, itching, pain, hardening of the vein, pain, thrombophlebitis, and vein discoloration. An increased instance of phlebitis can be seen with the use of Fosaprepitant through a peripheral intravenous site, and the use of Anthracycline-containing chemotherapy regimens (Sato, et al., 2014). Fosaprepitant can cause both infusion site adverse events and phlebitis.

**Hypersensitivity Reactions**

Hypersensitivity reactions with the use of Fosaprepitant are rare but can happen. The causative agent in Fosaprepitant that can cause hypersensitivity reactions is Polysorbate 80 (Merck & Co, Inc, 2014). Polysorbate 80 is an agent that can be found in other drugs such as Docetaxel, Rituximab, Ofatumumab, Ipilimumab and Temsirolimus to name a few. The
symptoms include flushing, erythema, dyspnea and anaphylaxis. These symptoms are often seen during the infusion but can be delayed, as well. Generally, once the medication is discontinued, the patient will not have further reactions. It is not recommended to reinitiate the infusion if a patient has a hypersensitivity reaction (Merck & Co, Inc, 2014). To assist with the resolution of a Fosaprepitant hypersensitivity reaction, the clinicians can administer intravenous Diphenhydramine, Hydrocortisone and Oxygen, if needed, during the time of the reaction (Olson, 2014).

**Conclusion**

Fosaprepitant is a beneficial antiemetic medication for oncology patients. This medication needs to be vigilantly monitored when given peripherally due to the chance of hypersensitivity reactions and phlebitis. Polysorbate 80 is often the causative agent in Fosaprepitant that causes hypersensitivity reactions. Patients also have the potential for developing delayed phlebitis and delayed reactions. “Further data are needed to determine whether certain patient populations, Fosaprepitant dosing, or co-administration with particular chemotherapeutic agents increases the likelihood of infusion site adverse events” (Leal, et al., 2014, p. 1317). It is important for clinicians to be aware of all information related to Fosaprepitant when considering the use for their patients.
References


Emend® (Fosaprepitant). North Wales, PA: Merck & Co, Inc; 2014.


