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Benefits and Risks of Fosaprepitant in Patients Receiving Emetogenic Regimens

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Abstract

Fosaprepitant dimeglumine (Emend IV®) is an IV antiemetic that may be beneficial to patients receiving highly emetogenic regimens. Aprepitant (Emend®) is an oral medication that is administered for three consecutive days, whereas fosaprepitant is a single-dose IV medication that is administered on the day of chemotherapy for 20–30 minutes (depending on the IV access type). Fosaprepitant may be useful, yet it can also present a risk for hypersensitivity reactions and phlebitis. Oncology nurses must be aware of the signs and symptoms of these potential adverse events to properly care for their patients.

Keywords

antiemetic; infusion site reaction; phlebitis; hypersensitivity reaction

Fosaprepitant dimeglumine (Emend IV®) is an IV medication commonly used as a premedication for chemotherapy regimens in combination with other antiemetics for the prevention of acute and delayed nausea and vomiting when administering moderately to highly emetogenic chemotherapy regimens (Leal et al., 2014). This medication is the IV form of the oral medication, aprepitant (Emend®). According to Sato et al. (2014), “Fosaprepitant is a water soluble, phosphorylated analog of aprepitant that is rapidly converted to aprepitant after intravenous administration” (p. 391). Fosaprepitant is a neurokinin-1 receptor antagonist (Sato et. al., 2014) shown to inhibit emesis induced by cytotoxic chemotherapeutic agents (Merck Sharp & Dohme Corp., 2015). This medication is given in conjunction with a 5-hydroxytryptamine receptor antagonist or serotonin receptor antagonist, such as ondansetron (Zofran®) or dexamethasone (Decadron®). Fosaprepitant is a single-dose medication that can be beneficial to the patient for as many as 72 hours after injection prior to emetogenic chemotherapy. 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-

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Gonzalez & Kraft, 2010). Fosaprepitant is a cost-effective antiemetic medication when compared to the three-day oral aprepitant antiemetic regimen, which costs about \$705 (Lexicomp, 2016a). The single dose of fosaprepitant costs about \$320 (Lexicomp, 2016b). Fosaprepitant is also a convenient option for patients because it is administered prior to chemotherapy in the infusion center rather than self-administered by the patient at home, where medication adherence may be a concern. According to Gan et al. (2007), aprepitant is a “highly selective, brain penetrating” neurokinin-1 antagonist whose half-life is 9–12 hours (p. 1,083).

Infusion Site Adverse Events and Phlebitis

Infusion site adverse events such as phlebitis occur when the drug leaks outside of the vein during administration. Related adverse events with fosaprepitant include erythema, induration, pain, swelling, thrombophlebitis, pruritus, vein discoloration, extravasation, and local reaction at the infusion site (Lundberg, Crawford, Phillips, Berger, & Wesolowski, 2014). Infusion site adverse events are graded from 1–5 (see Table 1). Phlebitis can be defined as an inflammation of the vein, which can be mechanical, chemical, or bacterial in origin (Ray-Barruel, Polit, Murfield, & Rickard, 2014). Some of the symptoms of phlebitis are erythema, itching, pain, hardening of the vein, thrombophlebitis, and vein discoloration. Increased occurrence of phlebitis is noted when fosaprepitant is injected through a peripheral IV site and/or during anthracycline-containing chemotherapy regimens (Sato et al., 2014). Fosaprepitant can cause infusion site adverse events and phlebitis.

Hypersensitivity Reactions

Hypersensitivity reactions with the use of fosaprepitant are rare and seen less than 1% of the time (Merck Sharp & Dohme Corp., 2015). The causative agent in fosaprepitant responsible for hypersensitivity reactions is polysorbate 80, a nonionic surfactant and emulsifier used in many foods and cosmetics (Merck Sharp & Dohme Corp., 2015). Polysorbate 80 is an agent that can be found in other drugs, such as docetaxel (Taxotere[®]), rituximab (Rituxan[®]), ofatumumab (Arzerra[®]), ipilimumab (Yervoy[®]), and temsirolimus (Torisel[®]), and it is a causative agent for hypersensitivity reactions. The symptoms of a hypersensitivity reaction 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. Reinitiating the infusion is not recommended if a patient has had a hypersensitivity reaction. Fosaprepitant should be permanently discontinued for any patients who experience a hypersensitivity reaction (Merck Sharp & Dohme Corp., 2016). To assist with the resolution of a fosaprepitant hypersensitivity reaction, clinicians can administer IV diphenhydramine, hydrocortisone, and oxygen, if needed, during the time of the reaction, according to their institution’s protocol (Olson, 2014). The use of rescue medications and oxygen should be determined by the specific symptoms that the patient is exhibiting during the hypersensitivity reaction.

Conclusion

Fosaprepitant is a beneficial antiemetic medication for patients with cancer. This medication needs to be vigilantly monitored when given peripherally because of the chance of hypersensitivity reactions and phlebitis. Polysorbate 80 is often the causative agent in fosaprepitant hypersensitivity reactions. Patients also have the potential for developing delayed phlebitis and reactions. According to Leal et al. (2014), “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” (p. 1,317). As such, clinicians must be aware of all information related to fosaprepitant when considering its use for their patients.

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At a Glance

- When used before emetogenic chemotherapy regimens, fosaprepitant dimeglumine (Emend IV[®]) may help to prevent acute and delayed nausea and vomiting.
- Infusion site adverse events related to fosaprepitant may include phlebitis, erythema, pain, swelling, and local reaction.
- Hypersensitivity reactions with the use of fosaprepitant are rare.

TABLE 1

Grades of Infusion Site Reactions

Grade	Definition
1	Tenderness with or without associated symptoms (e.g., warmth, erythema, itching)
2	Pain at access site, lipodystrophy and/or edema and/or phlebitis
3	Ulceration or necrosis, severe tissue damage; operative intervention needed
4	Life-threatening consequences; urgent intervention indicated
5	Death

Note. From *Common Terminology Criteria for Adverse Events* [v.4.03], by National Cancer Institute Cancer Therapy Evaluation Program, 2010. Retrieved from http://evs.nci.nih.gov/ftp1/CTCAE/CTCAE_4.03_2010-06-14_QuickReference_5x7.pdf

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