Hypersensitivity Reaction to Parenteral Nutrition: A Case Report

Kim Sabino, RD[1], Nicholas Bosso, PharmD[1], Carol McGuiness, BA[1], Andrew Doben, MD[1]
[1]Saint Francis Hospital, Trinity Health Of New England, Hartford, CT

Introduction

- Central parenteral nutrition (PN) is an option when a patient is unable to receive adequate nutrition via the gastrointestinal route.[1]
- PN is considered a complex, high-risk medication and can be associated with adverse reactions.[1-3]
- Adverse reactions are believed to be uncommon and can manifest as pruritus, anaphylaxis, respiratory distress, tachycardia and less common, back pain and gastrointestinal symptoms.[3-5]
- Common allergens in PN are intravenous lipid emulsions (ILE), multivitamins, and amino acid solutions.[3]
- We present a case of back pain and shortness of breath with PN administration.

Case Presentation

- A 66-year-old female presented with progressive epigastric pain and inability to take oral nutrition over several months.
- She had no food allergies and no past medical history. Surgical history included a cholecystectomy.
- An esophagogastroduodenoscopy was done on hospital day #2 revealing a gastric outlet obstruction.
- An upper gastrointestinal series showed complete obstruction at the first portion of the duodenum. There was concern for malignancy.
- PN was started on hospital day #5 via a peripherally inserted central catheter (PICC). A 3-in-1 solution [soy oil-based ILE 20%, multivitamin, trace elements, sodium chloride, potassium chloride, magnesium sulfate, and sodium phosphate] was administered.
- The patient immediately reported back pain and shortness of breath when the PN was started. The PN was stopped with resolution of symptoms.
- Patient had received magnesium sulfate, potassium chloride, dextrose and sodium chloride solutions on prior days without any hypersensitivity reactions. Nothing else had been administered via the PICC.
- On hospital day #6, PN was administrated for a 2nd time. The patient was premedicated with diphenhydramine and methylprednisolone sodium succinate.
- Back pain and shortness of breath were immediately reported with the PN infusion. It was stopped and symptoms resolved.
- There were no new medications administered before or after the 1st and 2nd administrations of PN.
- Since ILE is one of the most common allergens, it was eliminated from the PN.
- The patient did not experience any hypersensitivity reactions on the 3rd or subsequent 9 days of administration.
- On hospital day #8 the patient had a Whipple procedure. The pathology showed pancreatic adenocarcinoma.
- PN was discontinued on hospital day #16 given the patient's oral intake had improved.

Discussion

- In a systematic review of hypersensitivity reactions to parenteral nutrition, ILE was the most concerning causative agent (48.4%).[3]
- Back pain is an unusual hypersensitivity reaction.
- Weidmann et al.[5] outlined three patients who experienced back pain, as well as other symptoms. The back pain was seemingly caused by the soy lipid emulsion because symptoms resolved when it was removed.
- Swartz et al.[4] outlined a case where back pain appeared to be associated with the multivitamin in the PN solution since the back pain did not reoccur when the multivitamin was removed.
- Since PN without ILE did not cause an allergic reaction for this patient., ILE appeared to cause of the hypersensitivity reaction manifesting as back pain and shortness of breath.

Conclusion

- The ILE component of the PN appeared to be the most likely cause of the hypersensitivity reaction seen in this case
- It is important to consider PN component(s) as a reason for these types of reactions.

Citations

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