

# A Rare Case of Anaphylaxis to Bowel Prep: A Case Report and Review of the Literature

*LT Julia A. Savitz, MC USN\*<sup>†</sup>; Steven J. Durning, MD†*

**ABSTRACT** Polyethylene glycols (PEGs) are commonly utilized as a bowel prep prior to colonoscopy. They are generally well-tolerated, and reports of allergic reactions are rare. A recent search of the literature reveals only 4 prior reported cases of allergic reactions and only 1 other case of anaphylaxis. We report a second case of anaphylaxis following the ingestion of PEG solution, making this **the fifth reported case of an allergic reaction to PEG bowel prep.**

## INTRODUCTION

Colorectal cancer screening with endoscopy is one of the most frequently utilized procedures in the United States. **In 2002, the Centers for Disease Control estimated the number of performed colonoscopies to be 14.2 million with the capacity to increase to 22.4 million per year.** With the increasing public awareness of national guidelines that recommend screening colonoscopies beginning at age 50, the number of annual colonoscopies can only be expected to increase. **With so many patients undergoing this procedure, it is essential that physicians are aware of potentially life-threatening complications, no matter how rare they may be.**

PEG solutions are a popular choice for bowel preparation prior to colonoscopy, in that they have few reported serious side effects and are minimally absorbed by the intestinal mucosa. Allergic reactions to PEGs, which are a common ingredient in many cosmetics, gels, and drugs, are rare, and a search of the literature reveals few reported cases of allergic reactions.

We report a case on anaphylaxis following PEG ingestion. We conducted a PUBMED literature search using the following terms: anaphylaxis and PEG solution and reaction along with oral PEG, identifying 4 prior reported cases of allergic reactions to an oral PEG solution. We now present a fifth case of an allergic reaction following the ingestion of an oral PEG bowel prep.

## CASE REPORT

A 33-year-old female, in preparation for a colonoscopy, had been instructed to fast for 24 hours and to consume a PEG solution. Following ingestion of the first 8 ounces of the PEG solution, she began to experience urticaria, facial flushing, dyspnea, chest tightness, and a sensation of throat closure. She proceeded to ingest another 8 ounces, at which point symptoms worsened and began to be accompanied by light-

headedness. Forty-five minutes following her initial ingestion, the patient sought medical attention. In the emergency department, she received diphenhydramine, cimetidine, and prednisone with almost complete resolution of her symptoms and she was discharged home with a prednisone burst. Twenty hours after the initial ingestion, the patient returned to the emergency department. Her symptoms had returned and were now accompanied by tongue swelling. She promptly received epinephrine and laryngoscopy was performed, which revealed edema of the posterior arytenoids. Given the potential for airway compromise, she was admitted and treated with solumedrol, cetirizine, and cimetidine, with complete resolution of symptoms within 48 hours.

## DISCUSSION

PEG solutions are a commonly instituted bowel preparation for colonoscopy, given their presumed safe profile and minimal reported side effects (usually limited to abdominal discomfort, cramping, and nausea). Severe reactions following the ingestion of a PEG solution are rare, with a search of the literature revealing only 4 other cases. Anaphylaxis is listed as a potential complication on the literature **provided by the manufacturer of the particular PEG solution** that our patient ingested, and the manufacturer has record of 3 other anaphylactic reactions.

Assal and Watson,<sup>2</sup> along with Stollman and Manten,<sup>3</sup> reported angioedema attributed to an oral PEG. A case by Brullet et al<sup>4</sup> reported urticaria. Of the 4 cases, only 1, reported by Schuman and Balsam,<sup>5</sup> involved an anaphylactic reaction severe enough to require epinephrine. We now report a fifth case of an allergic reaction to PEG bowel prep (Table I).

Anaphylaxis is a severe systemic allergic reaction that is acute in onset and potentially fatal. It involves the release of inflammatory mediators from mast cells and basophils, leading to an acute, amplified allergic response.<sup>6</sup> Biphasic reactions complicate up to 20% of anaphylactic reactions, and the time to onset is variable, occurring anywhere from less than 1 hour after the initial reaction to greater than 24 hours following treatment. It is difficult to assess a patient's propensity for developing a biphasic reaction during their initial presentation,

\*National Naval Medical Center, Department of Medicine, 8901 Wisconsin Avenue, Bethesda, MD 20889.

†Department of Medicine, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Rd, Bethesda, MD 20814.

**TABLE I.** Previous Cases of Reactions to Oral PEG Solutions

Case (Ref. No.)	Age/Gender	Presentation	Treatment
1 (5)	70/M	Dyspnea, Wheezing, Hypotension, Flushing	sq Terbutaline, Albuterol Nebulizer, po Diphenhydramine, po Cimetidine, Methylprednisolone
2 (4)	86/F	Generalized Pruritus, Rash	im Methylprednisolone, Oral Diphenhydramine
3 (3)	70/M	Tongue/perioral and Lower Extremity Edema	im Diphenhydramine
4 (2)	52/F	Perioral Edema	iv Diphenhydramine, Dexamethasone
5 (This Case)	33/F	Urticaria, Dyspnea, Arytenoid Edema	iv Epinephrine, Methylprednisolone, Cetirizine, Cimetidine

Sq, Subcutaneous administration; po, oral administration; im, intramuscular administration; iv, intravenous administration.

although severity of the initial reaction, oral ingestion of the agent, and an excessive epinephrine requirement may prompt consideration for a prolonged period of observation.<sup>7</sup> Successful treatment involves prompt recognition and immediate pharmacologic treatment to prevent airway compromise or hypotension. Given the preceding period of fasting and the quick onset of symptoms that worsened with continued ingestion, the PEG oral solution was the most likely culprit in our patient's anaphylaxis. A search of the literature reveals only 4 other cases of allergic reactions following the ingestion of an oral PEG solution. This case, although rare, illustrates the fact that physicians should always be aware of potential adverse reactions to the medications they prescribe.

#### ACKNOWLEDGMENTS

I would like to acknowledge CAPT Heather D. Riggs, MC USAF and MAJ Ronald L. Cox, MC USAF for providing the background investigation and for taking care of the patient presented in this case report.

#### REFERENCES

1. Seeff LC, Richards TB, Shapiro JA, Nadel MR, et al: How many endoscopies are performed for colorectal cancer screening? Results from the CDC's survey of endoscopic capacity. *Gastroenterology* 2004; 127(6): 1841–4.
2. Assal A, Watson PY: Angioedema as a hypersensitivity reaction to polyethylene glycol oral electrolyte solution. *Gastrointest Endosc* 2006; 64: 294–5.
3. Stollman N, Manten HD: Angioedema from oral polyethylene glycol electrolyte lavage solution. *Gastrointest Endosc* 1996; 44: 209–10.
4. Brullet E, Moron A, Calvet X, Frias C, Sola J: Urticarial reaction to oral polyethylene glycol electrolyte lavage solution. *Gastrointest Endosc* 1992; 38: 400–1.
5. Schuman E, Balsam PE: Probable anaphylactic reaction to polyethylene glycol electrolyte lavage solution. *Gastrointest Endosc* 1991; 37: 411.
6. Simons FE: 9. Anaphylaxis. *J Allergy Clin Immunol* 2008; 121: S402–S407.
7. Lieberman P: Biphasic anaphylactic reactions. *Ann Allergy Asthma Immunol* 2005; 95(3): 217–26.