

BOWEL PREPARATION WITH POLYETHYLENE GLYCOL ELECTROLYTE LAVAGE SOLUTION IS POTENTIALLY HAZARDOUS IN PATIENTS WITH CARCINOMA OF THE CARDIA: A CASE REPORT

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Polyethylene glycol (PEG) electrolyte solution can induce potentially fatal complications when used as a lavage in preoperative bowel preparation. A 60-year-old man with carcinoma of the esophagogastric junction had a Mallory–Weiss tear after bowel preparation with PEG. He was successfully resuscitated, first with balanced salt solution then by transfusion. The literature on the subject is reviewed and recommendations are made, which include consideration of alternative methods of bowel preparation (e.g., sodium phosphate solution) in patients with esophageal obstruction.

Une solution électrolytique de polyéthylène glycol (PEG) peut provoquer des complications qui pourraient être fatales lorsqu'on l'utilise comme lavage pour préparer les intestins d'un patient avant une intervention. Un homme de 60 ans atteint d'un carcinome de la jonction oesophagogastrique a été victime d'une dilacération de Mallory–Weiss après avoir subi une préparation de l'intestin avec une solution de PEG. Il a été réanimé avec succès, d'abord au moyen d'une solution saline équilibrée et ensuite d'une transfusion. On passe en revue les écrits à ce sujet et formule des recommandations qui comprennent la possibilité d'utiliser d'autres façons de préparer les intestins (p. ex., solution de phosphate de sodium) des patients atteints d'une occlusion de l'oesophage.

Lavage with polyethylene glycol (PEG) electrolyte solution is an effective method of preparing the bowel for patients who undergo colonoscopy, barium enema examination and colonic surgery. It is also used in esophageal surgery with planned colonic interposition.

There are at least 6 reported cases of Mallory–Weiss tear¹⁻⁴ and 3 reported cases of esophageal perforation⁵⁻⁷ after bowel preparation with PEG. We report a case of Mallory–Weiss

syndrome associated with PEG preparation in a patient with adenocarcinoma of the gastroesophageal junction.

CASE REPORT

A 60-year-old man with no medical history was admitted because of a progressive dysphagia and weight loss over 2 months. A barium swallow examination and endoscopy revealed a lesion in the distal esophagus. A forceps biopsy of the lesion was taken

and examined to confirm the presence of an adenocarcinoma of the cardia. No metastases were found on biochemical testing, chest radiography, CT and ultrasonography. Esophagogastrectomy with colon interposition was planned. The large bowel was investigated before surgery by barium enema examination and angiography of the superior and inferior mesenteric artery. All results were normal. The hemoglobin level was then 139 g/L.

Four days before operation 4 L of

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PEG electrolyte solution was prescribed orally. The patient drank the solution over 4 hours. Soon after, he suffered nausea and retching followed by vomiting of bright red blood and passing of bright red stools. Tachycardia and hypotension developed. A balanced salt solution was given intravenously. The bleeding stopped and the patient's vital signs promptly returned to normal.

The next morning, bleeding started again. The hemoglobin level was then 84 g/L. The patient was given a blood transfusion and taken to the operating room. Endoscopy showed a tear, 1.5 cm long, which was bleeding at the gastroesophageal junction on the left anterior side away from the tumour. The tumour itself was not bleeding. A laparotomy was performed in preparation for resection, but the celiac nodes were found to be positive for malignant cells. There was also direct invasion of the gastrohepatic omentum by the tumour, extending to the liver and diaphragm. The tumour was considered unresectable and the operation was terminated. The bleeding stopped postoperatively without any further treatment.

DISCUSSION

PEG has been available for colonic preparation since 1980.⁸ Minor complications, such as nausea, bloating and cramping, are common; vomiting occurs less frequently.³ Other complications have also been reported, such as urticarial reaction, anaphylaxis, arrhythmia and malabsorption of oral medication.¹

Tears at the esophagogastric junction are probably seen more frequently than they are reported,³ and minor bleeding can certainly occur unnoticed. Santoro, Chen and Collen³ reported an incidence of 0.063% (2 of 3173 consecutive PEG preparations).

This is the first case report of hemorrhage in a patient with esophageal disease who had PEG preparation of the colon. In previous reports of Mallory-Weiss tear, the esophagus was normal.¹⁻⁴ The cases of esophageal perforation reported by McBride and Vanagunas⁵ and Eisen and Jowell⁷ occurred in patients aged 83 and 79 years, respectively, with a normal esophagus. In our patient the bleeding did not originate from the carcinoma.

Although rare, the complications of PEG are potentially fatal, so it is mandatory to discontinue PEG if the patient is vomiting.^{5,7} Santoro, Chen and Collen³ and Church⁹ postulated that PEG intolerance was a sign of gastrointestinal disease. Moreover, retching with a full stomach is potentially more dangerous in the presence of an occlusion at the cardiac junction, since intra-abdominal pressure higher than 200 mm Hg can be developed in this situation. Hence, the presence of distal esophageal carcinoma causing partial obstruction should be an absolute contraindication for the continuation of PEG ingestion if vomiting occurs. In this case, we should have been more cautious with the bowel preparation.

PEG can be given over 6 to 8 hours, and this can diminish the distress associated with gastric distension, although bleeding and perforation have been associated with intake of less than the 4 L usually prescribed.^{3,7} Mallory-Weiss syndrome has also been reported with a saline lavage overload technique.¹⁰ Metoclopramide¹¹ or sennoside¹² are recommended for elderly patients receiving PEG preparation. A 3-day liquid diet with cleansing enemas can be considered in these patients and is probably acceptable, although some studies showed a less well prepared bowel when a standard 2-day liquid diet was used instead of a preparation

with PEG.¹³⁻¹⁷ Preparation with oral sodium phosphate is another alternative. Smaller quantities are usually given, and this regimen is generally better tolerated than PEG.¹⁸⁻²¹ Although some studies have reported no difference in the incidence of nausea and abdominal pain,^{13,18,22,23} the incidence of vomiting seems to be less,²³ and no association with esophageal hemorrhage or perforation has been reported. Hypovolemia is a potential side effect associated with oral sodium phosphate, but is generally not significant²⁰ and can be prevented with appropriate parenteral hydration. The quality of colonic preparation with sodium phosphate is reported to be less,^{23,24} the same^{18,22} or better^{21,25} than with PEG. Colonic preparation with oral sodium phosphate could thus be effective in patients with esophageal carcinoma and can be used with other measures such as a liquid diet, enemas and metoclopramide.

Although not common, significant esophageal bleeding and even perforation can result from nausea and vomiting induced by PEG colonic preparation. PEG should be stopped immediately if the patient starts vomiting, and it is probably safer to consider alternatives to PEG preparation in cases of esophagogastric carcinoma and other causes of functional or mechanical obstruction in the esophagus.

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