

# Bowel Cleansing by Polyethylene Glycol preparation in Acute Pediatric Poisoning: Report Of Two Cases

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## Abstract

Whole bowel irrigation is a recently hopeful advancement in detoxification of some special poisons. Polyethylene glycol (PEG), a non-absorbable iso-osmotic laxative preparation, is the substance that can be used with the least rate of complications and causes complete evacuation of gastrointestinal tract in 4-6 hours. PEG preparation has been tolerated well in adults, children and pregnant women, but it seems that its use is mostly disregarded in the management of pediatric poisoning due to poor information about its benefits. Considering several benefits of it and personal experience of the author in regard to the efficacy of this substance in management of pediatric poisoning, here two cases of acute poisoning (swallowing two packets of heroine and a lizard) managed by 40ml/kg/h of PEG are presented. Not only there is no report about any side effect after using this substance in high doses, but also there are some reports of the excretion of the ingested things in 4-6 hours after the administration of this preparation. The author, based on her own successful experience, suggests polyethylene glycol in the management of acute pediatric poisoning when there seems to be no other way except surgery.

## INTRODUCTION

Polyethylene glycol preparation, Colyte or Golytely is a soluble non-absorbable preparation used in low volumes in maintenance therapy of constipation in adults and less frequently in children (1,2).

A comprehensive clinical review has been recently performed by the cooperation of USA, Australia, England and Europe and the results were published by The American European Academic Toxicology Center in 2007(3). In the mentioned report, PEG solution has been introduced as the second drug of choice in the management of acute poisoning when activated charcoal is not efficient. According to this study, gastric lavage and induced emesis, especially 1 hour after the poison ingestion, are practically inefficient (1, 3). The advised dose of PEG varies based on the age and the aimed treatment. In children, 25-50ml/kg/h can cleanse the gastrointestinal tract for endoscopy, radiographic study or surgery in 4-6 hours (4).

In children less than 10kg, 50ml/kg during 4 hours can be used and if required by repeated doses the therapeutic aims can be achieved (3,4). This preparation, in addition to treating constipation, is beneficial in poisoning with heavy metals especially Iron, enteric coated preparations, sustained-released drugs and packaged substances (marijuana, heroine,

opium) when endoscopy and activated charcoal are useless (4,5,6). It should be mentioned that in poisoning with heroine pockets, paraffin is not suggested (7).

Polyethylene glycol has been tolerated well by children in gastrointestinal tract preparation for endoscopy and no serious complication has been observed. In one study on children, administration of 40ml/kg/h has resulted in intestinal cleansing in 2-6 hours (3).

This preparation should not be mixed with tasty substances and if required it may be mixed with bright substances such as lemon juice (4). Its non serious side effects are nausea, abdominal extension, abdominal cramps and rarely water and electrolytes imbalance in young children. No drug interaction has been observed (3,4,5).

Polyethylene glycol preparation is contraindicated in intestinal obstructions, perforation cardio-vascular instability or where the airway cannot be protected (1,3,4). It also should be administered with caution in colitis. Lack of adequate knowledge about the benefits of polyethylene glycol may contribute to disregarding its application in acute pediatric poisoning. In this paper we present two rare cases of acute pediatric poisoning managed efficiently by this solution.

## **CASE REPORTS**

### **CASE NO. 1**

In 2003, an 8-year old boy resident of Shiraz/ Iran referred to the Emergency Unit of Namazi Hospital (Shiraz/ Iran) following accidental swallowing of a lizard 3 hours prior to the referring. At admission he had frequent vomiting, but the result of physical examination was normal. Endoscopy was performed immediately and an attempt was made to find an efficient management of lizard poisoning from Fars Information Center for Drugs and Toxins that was useless. The author who was the fellowship of gastroenterology at that time thought that polyethylene glycol, being efficient in intestinal cleansing for endoscopy, may work in this case as well. Therefore after consulting with the on-call attend, one teaspoon of ethylene glycol powder was solved in 250ml water and 40ml/kg/h of the solution was administered to the patient. Four hours after the administration lizard was defecated. The patient was followed for 24 hours for any probable side effects and then was discharged in a good condition.

### **CASE NUMBER 2**

In 2006, a 2.5-year old girl, the daughter of addict parents, was brought to the Emergency Unit of Afzalipoor Hospital in Kerman/Iran because of swallowing two pockets of heroine 4 hours prior to the admission. Vital signs and physical examination were normal. Abdominal radiography did not show the place of pockets and in endoscopy pockets were not found yet. Investigation of gastrointestinal tract by using barium meal did not help. Therefore the only ways were either waiting for spontaneous defecation or performing an exploring surgery. Considering the passed time from the time of ingestion, it was decided to use polyethylene glycol, therefore, 50ml/kg/h was used for 4 hours. According to the child's mother, intact pockets were defecated and the child was discharged after 24 hours.

## **DISCUSSION**

A review of the literature (5) as well as two presented cases shows the efficacy of polyethylene glycol in the management of poisoning. In the two mentioned poisoned

cases the only wise way was using PEG solution, since the other possible options i.e., exploring surgery (8) or waiting for spontaneous passage through the body, had some risk. PEG in various doses has been used previously in the management of adults' poisoning and other acute poisonings when other therapies had been not helpful such as poisoning with packets containing poisoned substances, iron and slow-releasing drugs and also for preparation of gastrointestinal tract for endoscopy or surgery (1, 4). No serious complication even in neonates has been reported so far for this substance. Therefore, considering the beneficial effects of PEG and as it has been introduced as the second rank treatment in pediatric poisoning (3), it is recommended that in facing such poisonings, especially when the poisoned case refers after 1 hour of the poison ingestion, in case of no contraindication, PEG in high volumes be administered via nasogastric tube. The only problem in regard to using PEG in Iran at present is its high expense and unavailability in some parts of the country.

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