

# URTICARIA AS A RARE SIDE EFFECT OF POLYETHYLENE GLYCOL-3350 IN A CHILD: CASE REPORT

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**SUMMARY** – Polyethylene glycol electrolyte (PEG-3350) solution is usually used for bowel emptying before colonoscopy in adults. It has also been reported to be safe in children. It is thought that bowel irrigation with this solution can be a useful treatment alternative for poisoning with slow releasing drugs, swallowed packaged substances, enteric coated drugs, drugs not binding to charcoal, and heavy metals in children. Due to high molecular weight of PEG-3350, its absorption from the intestinal mucosa is very low (0.2%). Therefore, it is less likely to have side effects. A three-year-old girl bit and ate one-third of an alkali battery and was brought to our pediatric emergency unit. Vital signs and results of physical examination and laboratory investigations were normal. Irrigation of the bowels with PEG-3350 solution given orally at a rate of 20 mL/kg/h was initiated. Upon excretion of feces of normal appearance in the sixth hour, irrigation was continued. Since rashes and itching started throughout her body in the thirtieth hour after administration of 9 L PEG-3350, the irrigation was discontinued and the patient was administered antihistamines. Rashes and itching regressed within one hour of its discontinuation. This suggested that they were due to the irrigation solution. There are five adult cases of allergic reactions to PEG-3350 reported in the literature. The case presented is the first pediatric patient developing allergic reaction to PEG-3350.

**Key words:** *Child; Polyethylene glycol 3350; Hypersensitivity; Urticaria; Pruritus; Emergency treatment; Case reports*

## Introduction

Polyethylene glycol electrolyte (PEG-3350) solution is used to empty bowels in adults before colonoscopy. It has been reported that PEG-3350 can be used safely in children as well<sup>1,2</sup>. It has been considered that this solution can be useful for bowel irrigation in the treatment of childhood poisoning with slow releasing drugs, drugs not binding to charcoal, and heavy metals<sup>3-5</sup>.

As PEG-3350 has a high molecular weight, it is absorbed through intestinal mucosa in small quantities

(0.2%), which reduces the likelihood of side effects. Although side effects such as abdominal pain, nausea, vomiting and dizziness can be caused by PEG-3350, serious side effects are rare. It has been reported that even its minimal absorption may cause systemic reactions in patients with sensitivity to this solution<sup>6</sup>. There are five adult cases of allergic reactions to PEG-3350 reported in the literature<sup>6-10</sup>. The case presented in this report is the first pediatric patient developing allergic reaction to PEG-3350.

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## Case Report

A three-year old girl presented to our pediatric emergency unit on January 31, 2014 after biting and

eating one-third of an alkali battery. Vital signs, findings of physical examination and results of laboratory tests did not show any abnormalities. Bowel irrigation with orally administered PEG-3350 solution (20 cc/kg/h) was initiated. The patient was referred to the pediatric intensive care unit for additional work-up and treatment for heavy metal poisoning. Because the patient excreted feces that appeared normal in the sixth hour, the irrigation was continued. Although her vital signs were normal and she did not have a history of allergic reactions, she developed rashes and itching throughout her body in the thirtieth hour of 9 L PEG-3350 solution oral administration. Since she was thought to develop urticaria due to this solution, the irrigation was discontinued and the patient was administered antihistamines. Her complaints regressed within one hour. The patient did not have any problems and was discharged from the hospital.

## Discussion

The PEG-3350 solution is used not only for bowel preparation before colonoscopy but also for complete intestine irrigation after poisonings in childhood. Severe side effects of this solution are rare. Five cases of allergic reactions to this solution have been reported to date. Schuman and Balsam<sup>9</sup> report on anaphylaxis due to its oral intake in a 70-year-old male patient. Savitz and Durning<sup>10</sup> also report on anaphylaxis in a 33-year-old woman after the intake of 240 mL PEG-3350. Brullet *et al.*<sup>8</sup> report that an 86-year-old woman developed urticaria after administration of 1 L of this solution for colonoscopy, as in the case presented here. In a report by Stollman and Manten<sup>7</sup>, a 70-year-old man developed angioedema 20-30 min after taking 740 mL PEG-3350. Assal and Watson<sup>6</sup> also describe a 52-year-old female patient developing angioedema after the intake of 600 mL PEG-3350. The case presented in this report is the first pediatric case having developed urticaria following irrigation with PEG-3350 for poisoning.

Although PEG-3350 rarely causes severe side effects, its minimal absorption may induce severe reactions in people having a systemic sensitivity to this substance. In conclusion, it should be kept in mind that PEG-3350 used for bowel emptying before colonoscopy or for irrigation after childhood poisonings may produce serious side effects, although they are claimed to appear rarely.

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## Sažetak

URTIKARIJA KAO RIJETKA NUSPOJAVA POLIETILEN GLIKOLA-3350 KOD DJETETA:  
PRIKAZ SLUČAJA

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Otopina polietilen glikola (PEG-3350) najčešće se primjenjuje za pražnjenje crijeva prije kolonoskopije u odraslih osoba, a opisuje se kao sigurno sredstvo i u djece. Smatra se da ispiranje crijeva ovom otopinom može biti korisna alternativa za liječenje otrovanja lijekovima sa sporim otpuštanjem, progutanim pakovanjima nekih tvari, lijekovima sa zaštitnom ovojnicom za probavni sustav, lijekovima koji se ne vežu na ugljen te teškim metalima u djece. Zbog velike molekularne težine vrlo mali dio PEG-3350 (0,2%) se apsorbira iz crijevne sluznice pa su stoga nuspojave manje vjerojatne. Djevojčica u dobi od tri godine zagrizla je i progutala jednu trećinu alkalne baterije pa je dovedena u našu hitnu pedijatrijsku službu. Vitalni znaci kao i rezultati fizikalnog pregleda i laboratorijskih pretraga bili su normalni. Započeto je ispiranje crijeva otopinom PEG-3350 peroralno, 20 mL/kg/h. Nakon što je dijete imalo stolicu normalnog izgleda u šestom satu, ispiranje je nastavljeno. Međutim, nakon što je djevojčica primila 9 L PEG-3350, u tridesetom satu davanja otopine nastupio je osip i svrbež po čitavom tijelu pa je ispiranje crijeva prekinuto i djetetu su dani antihistaminici. Osip i svrbež su se povukli unutar jednog sata od prestanka ispiranja otopinom PEG-3350. U literaturi je opisano pet slučajeva alergijskih reakcija na PEG-3350 u odraslih osoba. Ovaj prikaz opisuje prvi slučaj alergijske reakcije na PEG-3350 u djeteta.

Ključne riječi: *Dijete; Polietilen-glikol 3350; Alergije; Urtikarija; Pruritus; Hitno liječenje; Prikazi slučaja*