Pantoprazole-Induced Anaphylaxis in a Pediatric Patient: A Case Report

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Abstract

Drug-induced anaphylaxis (DIA) is a systemic hypersensitivity reaction characterized by its swift onset shortly after the initiation of some medications. The degranulation of mast cells and basophils mediates this systemic allergic reaction. Moreover, the anaphylactic reaction is marked by its generalized, rapid evolution, multi-systemic involvement, and inherent life-threatening nature. Prevalence and incidence of drug-induced anaphylactic reaction are under-explored, due to the wide range of presentation of this reaction, data availability, and the variability of each population. While a spectrum of medications holds the potential to trigger anaphylactic reactions, pantoprazole, a widely prescribed proton pump inhibitor (PPI) that is used in the management of acid-related disorders, infrequently elicits such adverse reactions. There are few reported cases in the literature of pantoprazole-induced anaphylactic reactions. To the best of our knowledge, there are no reported cases of pantoprazole-induced allergic reactions in the pediatric population. The documented cases exhibited a diverse range of clinical presentations, including mild manifestations such as urticarial rash, and in certain instances, escalating to the severity of Stevens-Johnson syndrome (SJS). In the following case report, we present a compelling case involving an eleven-year-old female patient, who following the administration of intravenous pantoprazole, developed an anaphylactic reaction. The patient, without prior known allergies, exhibited classic symptoms of anaphylaxis, including skin rash and respiratory distress, necessitating prompt intervention. This case report will add to the literature concerning pantoprazole-induced anaphylaxis within the pediatric population, further expanding our understanding of this phenomenon.

Keywords: Pantoprazole; Anaphylaxis; Pediatrics; Proton Pump Inhibitors; Hypersensitivity.

Introduction

Drug-induced anaphylaxis represents severe, potentially life-threatening hypersensitivity responses triggered by various medications. Pantoprazole, a commonly prescribed proton pump inhibitor, may rarely lead to such critical events necessitating urgent medical intervention and documentation. This case report describes the clinical course of an eleven-year-old female patient who immediately developed anaphylaxis following the administration of intravenous pantoprazole. This case is significant because anaphylactic reactions to pantoprazole are infrequently reported, especially in the pediatric population. Moreover, the presentation and management of anaphylaxis in children is challenging, emphasizing the importance of sharing clinical experiences from such cases. This case report discusses the clinical presentation, evaluation, interventions, and outcomes. Furthermore, it highlights the need for increased vigilance when administering medications with potentially severe adverse reactions. Also, it contributes to the limited literature on anaphylaxis induced by pantoprazole, and the management of uncommon yet life-threatening reactions in children.

Case Report

An eleven-year-old girl, with no significant medical or surgical background, presented to the emergency department with a three-day history of abdominal pain, fever, nausea, mild dyspepsia, vomiting, and increased frequency of urination. A comprehensive assessment was conducted, where the patient was looking ill and dehydrated. Apart from mild tenderness in the lower abdomen, other systemic examinations yielded unremarkable findings. Investigations were done including sending a urine sample for routine and microscopy examination, which reported the presence of pus cells and blood in the urine. Also, a complete blood count test revealed elevated neutrophil count and high C-reactive protein. Consequently, the patient was admitted and managed as a case of a lower urinary tract infection. She received intravenous antibiotics and other supportive measures. Following the administration of two doses of intravenous ceftriaxone without any adverse reactions, the patient had nausea, and mild dyspepsia preventing oral intake. In response, an intravenous injection of 40 mg pantoprazole was given. Approximately five minutes after receiving the pantoprazole injection, the patient started to have dyspnea, facial and lips swelling, and a red rash over both cheeks, chest, and arms. Clinical examination revealed a pulse rate of 106 bpm, blood pressure of 117/72 mmHg, temperature of 36.4C, respiratory rate of 24 breaths per minute, and oxygen saturation of 99% on room air. Chest auscultation revealed equal air entry bilaterally, normal vesicular breathing, with scattered wheezes. The prompt intervention included the administration of a 100 mg IV injection of hydrocortisone, 1 AMP IV injection of chlorpheniramine, and hydrocortisone nebulization. Subsequently, the patient's condition improved, she was able to breathe normally and both swelling and rash had improved. Medication reconciliation confirmed that the patient had only received pantoprazole, which had triggered this allergic reaction.

Upon discharge, the patient and her mother received education and were advised to be cautious if PPIs were prescribed again. They were also instructed to promptly return to the ER if similar symptoms recurred.

Discussion

Our report discussed pantoprazole-induced anaphylaxis in a pediatric patient who received intravenous pantoprazole. Shortly after administration, the patient developed an allergic reaction and was managed accordingly. As per our knowledge, pantoprazole-induced anaphylaxis in pediatrics has never been reported. Drug-induced anaphylactic reactions are rare but severe hypersensitivity reactions that can be potentially life-threatening. Anaphylaxis affects breathing, and/or circulatory systems, and is usually associated with skin and mucosal manifestations.[1] Given the seriousness of these reactions, healthcare professionals must identify and manage them effectively to ensure better outcomes. The mechanism of drug-induced anaphylaxis involves drug-specific antibodies of the IgE and IgG class that link the drug to antibody receptors on multiple cell types, causing their activation and mediator release.[2] Different medications, including proton pump inhibitors (PPIs) such as pantoprazole, can trigger anaphylactic reactions. Pantoprazole is a widely prescribed proton pump inhibitor in adults and pediatrics, it functions by blocking the H+/K+ ATPase enzyme, which is the final step in acid secretion into the stomach.[3] Moreover, in the pediatric age group, PPIs are used to treat peptic conditions, including gastric ulcers, gastroesophageal reflux disease (GERD), and Helicobacter pylori infections.[4] It is generally well-tolerated with a favorable safety profile. However, hypersensitivity reactions have been reported in a few cases in the literature. Nowadays, due to the increasing rates of prescribing PPIs, hypersensitivity reactions to PPIs are concerning. Here, we report a unique case of an anaphylactic reaction in a pediatric patient following the administration of intravenous pantoprazole, which as far as we searched was never reported. The literature review showed a case report discussing the experience of a 21-year-old female who exhibited a severe anaphylactic reaction two minutes following the intravenous administration of 40mg of pantoprazole.[5] Moreover, a case series presented two cases of pantoprazole-induced anaphylactic reactions. The initial case involved a 38-year-old female who presented with signs of anaphylaxis, twenty minutes after ingesting 40mg of oral pantoprazole.[6] The second case was a 32-year-old female who experienced rash, pruritus, and significant periorbital and labial edema, after the ingestion of 40mg of oral pantoprazole.[5] Furthermore, another case reported an anaphylactic reaction during a general anesthesia procedure, when a 50-year-old male patient received an intravenous injection of pantoprazole (40 mg), months post-surgery, a confirmatory skin test showed pantoprazole allergy.[7] These comprehensive case reports collectively underline the critical significance of medication surveillance, particularly when using proton pump inhibitors, and highlight the importance of quick recognition and effective management of anaphylaxis. The

limitation of this case report is that is a single case design, and it is based on a single patient`s experience which may need further studies for the adverse effect of pantoprazole in the pediatric population. Also, more studies should investigate the possibility of cross-reactivity between pantoprazole and other PPIs. This case report will contribute to the limited literature on PPIs-induced anaphylaxis in pediatric patients, highlighting the need for awareness among healthcare providers about this reaction in children.

Conclusion

Currently with the increasing use of proton pump inhibitors, such as pantoprazole, for a range of medical indications, including pediatric patients, it is crucial to be aware of pantoprazole-induced anaphylaxis in children. More studies should be dedicated to analyzing existing data to yield a precise understanding of the true prevalence and incidence of anaphylactic reactions associated with PPIs in the pediatric population. Moreover, healthcare providers should be more aware and attentive when prescribing PPIs for children.

References

1. Reber LL, Hernandez JD, Galli SJ. The pathophysiology of anaphylaxis. J Allergy Clin Immunol 2017 Aug;140(2):335-348. . Internet.

2. Franceschini F, Bottau P, Caimmi S, Cardinale F, Crisafulli G, Liotti L, et al. Mechanisms of hypersensitivity reactions induced by drugs. Acta Biomed 2019 Jan;90(3-S)(Suppl 3):44-51. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6502177/. Internet.

3. Ahmed A, Clarke JO. Proton Pump Inhibitors (PPI). StatPearls Publishing; 2023.

4. Ward RM, Kearns GL. Proton pump inhibitors in pediatrics : mechanism of action, pharmacokinetics, pharmacogenetics, and pharmacodynamics. Paediatr Drugs 2013 Apr;15(2):119-131. . Internet.

5. Faridaalaee G, Ahmadian Heris J. Anaphylaxis as a rare side effect of pantoprazole; A case report. Emerg (Tehran) 2018;6(1):e34.

6. Gupta PP, Bhandari R, Mishra DR, Agrawal KK, Bhandari R, Jirel S, et al. Anaphylactic reactions due to pantoprazole: case report of two cases. Int Med Case Rep J 2018 May;11:125-127. . Internet.

7. Lai H-C, Hsu S-W, Lu C-H, Ma H-I, Cherng C-H, Hung N-K, et al. Anaphylaxis to pantoprazole during general anesthesia. J Anesth 2011 Aug;25(4):606-608. . Internet.