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Case Report

A Case Report on Rabeprazole Desensitization for a Patient with Barrett's Esophagus and Anaphylaxis to Multiple PPIs

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Abstract:

We report the case of a 58-year-old male patient with Barrett's esophagus who experienced anaphylaxis after taking omeprazole and esomeprazole. The patient was successfully desensitized to rabeprazole, despite previously being sensitized to it. Approximately seven years prior, the patient developed generalized urticaria, angioedema, respiratory distress, and loss of consciousness after ingesting omeprazole, which required emergency medical intervention. One year ago, the patient underwent a drug allergy workup with 20 mg of esomeprazole under our supervision in the clinic. Although the skin prick test was negative, we proceeded with an oral provocation using 1/64 of the full dose of esomeprazole (0.31 mg). However, a couple of hours after administration, the patient experienced angioedema, urticaria, and shortness of breath, leading to hospitalization. Given the urgent need for proton pump inhibitor (PPI) therapy due to Barrett's esophagus, as recommended by a gastroenterologist, we initiated desensitization to rabeprazole (20 mg) in a hospital setting, following established international protocols. Before the desensitization, the patient's sensitivity to rabeprazole was confirmed through skin tests. The desensitization procedure was successful. In conclusion, while omeprazole and esomeprazole have a high potential for cross-reactivity due to their structural similarities, rabeprazole may be a viable alternative. However, hypersensitivity to rabeprazole should not be overlooked. This case highlights the importance of considering cross-reactivity in PPI hypersensitivity and emphasizes the value of skin tests before provocation. When no alternative PPI treatment options are available, a PPI desensitization protocol may be effectively implemented.

Keywords: Rabeprazole Desensitization

Introduction

Proton Pump Inhibitors (PPIs) are widely prescribed for the treatment of gastrointestinal disorders, including gastroesophageal reflux disease (GERD) and peptic ulcer disease. These medications are generally well-tolerated and associated with a low incidence of adverse effects [1]. However, drug hypersensitivity reactions (DHRs) related to PPIs are increasingly contributing to the number of referrals to allergy departments worldwide, accounting for approximately 1%-3% [2,3].

The management of patients with confirmed hypersensitivity to PPIs, including rabeprazole, presents a significant challenge due to the high rate of potential cross-reactivity and the limited availability of alternative medications with comparable efficacy and safety profiles [4]. Desensitization protocols offer a viable solution, allowing patients to continue essential treatments despite their hypersensitivity [3,5]. Nevertheless, documented cases of successful rabeprazole desensitization are sparse, creating a substantial gap in the clinical literature and guidelines for practitioners.

This clinical case report aims to address this gap by presenting our experience with rabeprazole desensitization in a patient with a documented hypersensitivity reaction. Through this report, we seek to contribute our practical guidance to the medical community highlighting the feasibility and safety of desensitization protocols in the management of PPI hypersensitivity. The significance of our findings lies not only in the successful outcome but also in providing a documented reference for clinicians encountering similar challenges.

Case Report

A 58-year-old male patient was diagnosed with Barrett's esophagus, and a gastroenterologist prescribed a PPI (proton pump inhibitor) medication. Seven years prior, the patient experienced anaphylaxis—characterized by generalized urticaria, angioedema, respiratory distress, and loss of consciousness—after taking omeprazole, which required emergency medical intervention. Due to this severe hypersensitivity, the patient was referred for a drug allergy workup.

Considering that a significant amount of time had passed since the initial episode, which was based solely on the patient's account, we decided to perform an oral graded challenge with a 20 mg dose of esomeprazole in the clinic under supervision. The patient was initially given a 1/64 dose (0.31 mg) of the drug. After one hour of observation with no reported symptoms, we scheduled the procedure to continue the following day. However, several hours later, the patient developed angioedema, urticaria, and dyspnea, which necessitated hospitalization.

Skin Tests

Due to the hypersensitivity reactions observed with both omeprazole and esomeprazole, which suggest possible cross-reactivity, a skin testing procedure with rabeprazole was planned. A skin prick test (SPT) was conducted using commercial oral preparations of rabeprazole in tablet form (20 mg). Histamine 0.1% and saline 0.9% were used as positive and negative controls, respectively.

For the SPT, the tablets were ground into a fine powder, and a solution was prepared by mixing the powder with 1 mL of 0.9% saline. The test was performed on the forearm and was read after 15 minutes. A positive result was defined as a wheal approximately 3 mm larger than the negative control site, accompanied by surrounding erythema. The results of the rabeprazole prick test showed a 4x4 mm papule (see Table 1), indicating a positive hypersensitivity reaction.

Table 1: Skin test results with rabeprazole

Drug	Before desensitization	After desensitization
Rabeprazole (20 mg/mL)	4x4 mm wheal/5x8mm flare diameter	-/-
Negative control	(-)	(-)

*(-): Negative

Desensitization

The desensitization protocol was conducted in the allergy unit of the hospital under the supervision of nurses and doctors, following the patient's consent. Resuscitation equipment was readily available during the procedure. A 20 mg tablet of rabeprazole was dissolved in a 0.9% NaCl solution, and serial 10-fold dilutions were prepared. For the oral desensitization, the initial dose was 0.01 mg, which was then increased twofold over 12 administrations at 30-minute intervals (see Table 2). The patient tolerated the procedure without any issues.

A skin prick test with rabeprazole was performed 24 hours after completing the desensitization, and the results were negative. The patient subsequently tolerated a full 20 mg dose of rabeprazole, which was administered as two 10 mg doses with a 30-minute interval in between, followed by a final 1-hour observation period, during which no adverse reactions were observed. Per the gastroenterologist's prescription, the patient is now receiving a fourfold increase in the dose of rabeprazole.

Step	Dilution	Time(min)	Dose, ml	Dose, mg	Cumulative dose, mg
1	1/1000	30	0,5	0,01	0,01
2	1/1000	30	1	0,02	0,03
3	1/1000	30	2	0,04	0,07
4	1/1000	30	4	0,08	0,15
5	1/100	30	0,5	0,1	0,25
6	1/100	30	1	0,2	0,45
7	1/100	30	2	0,4	0,85
8	1/100	30	4	0,8	1,65
9	1/10	30	0,5	1	2,65
10	1/10	30	1	3	5,65
11	1/10	30	3	6	11,65
12	1/10	30	6	12	23,65

Table 2: Desensitization protocol with rabeprazole

Discussion

The presented case underscores the complexity and importance of managing DHRs to PPIs, particularly in patients requiring continued therapy for conditions such as Barrett's esophagus [1,6,7]. In this case the patient experienced anaphylaxis and severe hypersensitivity symptoms, including generalized urticaria, angioedema, and respiratory distress, following exposure to omeprazole and esomeprazole, necessitating urgent medical intervention. This highlights the critical need for alternative treatment strategies when traditional PPIs provoke adverse reactions.

The subsequent oral desensitization protocol with rabeprazole was meticulously planned, employing serial dilutions to gradually increase the dose over several hours. This approach allowed the patient to tolerate a therapeutic dose of rabeprazole without adverse

effects, demonstrating the efficacy and safety of the desensitization process [3,5,8].

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It is noteworthy that most PPIs are formulated as slow-release medications, posing challenges in dose titration and potentially delaying hypersensitivity reactions. This necessitates extended observation periods following DPT to monitor for delayed-onset reactions. The successful outcome in this case supports the feasibility of prolonged observation protocols post-DPT, ensuring patient safety and effective management of PPI hypersensitivity [2,9].

In conclusion, while hypersensitivity reactions to PPIs pose significant clinical challenges, careful consideration of cross-reactivity and systematic approaches such as skin testing and desensitization can provide viable treatment options for patients requiring PPI therapy [1,4,7,9]. Further research and standardized guidelines are essential to optimize the management of PPI hypersensitivity and improve patient outcomes.

Conclusion

The case demonstrates the successful use of rabeprazole desensitization after a patient experienced anaphylaxis and severe hypersensitivity reactions to other proton pump inhibitors (PPIs). Careful desensitization can be a viable option for patients who require PPI therapy but have shown significant hypersensitivity to multiple PPIs. The systematic approach of conducting skin tests and gradually increasing the dosage was effective in allowing the patient to tolerate therapeutic doses without any adverse effects. This highlights the importance of individualized treatment strategies and extended observation in managing PPI hypersensitivity, ensuring safe and effective care for patients with complex medication allergies.

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Author contributions

N.C. contributed to the data collection, manuscript writing, revision editing, final manuscript review, and production, and approved the final version. B.K. contributed to the final manuscript review and production and approved the final version. M. G. contributed to the final manuscript review and production and approved the final version. S. K. contributed to the final manuscript review and production and approved the final version.

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Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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