

A Case Report on Allergic Reaction to Pantoprazole

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ABSTRACT

Pantoprazole is a proton pump inhibitor and acts by blocking the gastric pump H⁺, K-ATPase to inhibit gastric acid secretion. Hypersensitivity reactions due to pantoprazole can be both immediate and delayed hypersensitivity reactions but sometimes it can be a life-threatening anaphylactic reaction. A 64-year female was admitted to the private ward of Shri Mahant Indires hospital with chief complaints of 6-7 episodes of vomiting and abdominal pain. Various laboratory tests were performed and the diagnosis was given. After the administration of Injection pantoprazole 40 mg patient developed rashes, itching, vomiting, burning sensation in whole body, restlessness, fever, and chills immediately within few hours. Hypersensitivity reaction to pantoprazole occurred due to Type-1 hypersensitivity reaction. Proton pump inhibitors like pantoprazole decrease gastric pH which increases bacterial growth in the oral cavity and upper GIT. To check on such ADR's health care professionals should keep an eye on the medication use and its effects and should be cautious while prescribing pantoprazole. Pharmacists should educate the patients regarding possible hypersensitivity reactions from PPIs and how to take these medications to avoid any serious adverse drug reaction.

Keywords: PTCA-Percutaneous transluminal coronary angioplasty, CBC-Complete Blood Count, RFT-Renal Function tests, LFT-Liver function tests, Hb-Hemoglobin, TLC-Total Leucocyte count, PCV-Packed cell volume, RBC-Red Blood Cells, RDW-Red cell distribution width, SGOT-Serum Glutamic

oxaloacetic transaminases, ALP-Alkaline phosphatase, GGT-Gamma Glutamyl transferase, PR-Pulse rate, RR-Respiratory rate, BP-Blood Pressure, Temp-Temperature, SpO₂-Oxygen saturation.

INTRODUCTION

Pantoprazole is a proton pump inhibitor and acts by blocking the gastric pump H⁺, K-ATPase to inhibit gastric acid secretion¹. Proton pump inhibitors are used for the treatment of diseases like altered intestinal pH, Barrett's esophagus, peptic ulcer, gastroesophageal reflux disease (GERD)², erosive gastritis, esophagitis, duodenal ulcer, and Zollinger Ellison syndrome³. Proton pump inhibitors get metabolized in the liver so they are not directly hepatotoxic⁴ but hypersensitivity reactions can occur due to proton pump inhibitors⁵.

Hypersensitivity reactions due to pantoprazole can be both immediate and delayed hypersensitivity reactions but sometimes it can be life threatening anaphylactic reaction^{6,7}.

Immediate Hypersensitivity reaction: The reaction to the drug that occurs within 24 hours of drug administration is called immediate hypersensitivity^{8,9,10}.

Delayed Hypersensitivity reaction: The reaction that occurs between 24 to 48 hours of interval after drug administration is called delayed hypersensitivity reaction^{8,9,10}.

Proton pump inhibitors are usually well-tolerated and do not have any severe adverse drug reactions. The Uppsala monitoring center database has 0.2%–0.7% of all incidences of anaphylaxis of both H2 receptor antagonists and PPIs¹¹.

The causative drug and a causality relationship between the drug and the reaction are essential to optimize therapeutic safety and identification of hypersensitivity reactions¹².

CASE REPORT

A 64-year old female was admitted to the private ward of Shri Mahant Indires hospital with chief complaints of 6-7 episodes of vomiting and abdominal pain. The patient was a non-vegetarian and was an ex-chulha worker and had a history of 12 cycles of lung chemotherapy with post percutaneous transluminal coronary angioplasty (PTCA) in 2016. Various laboratory tests were prescribed to the patient for diagnosis.

S.No.	Laboratory Test	Observed Value	Normal Value
A. Complete Blood Count			
i.	Hb	9.90 g/dl (L)	11.5-15 g/dl
ii.	PCV	29.5 % (L)	36-46%
iii.	RBC	3.44 million/mm ³ (L)	3.8-4.8 million/mm ³
iv.	RDW	15.70	11.5- 14.5
v.	TLC	2.9 cells/ mm ³	5-10 cells/mm ³
vi.	Monocytes	12.40%	2-10%
vii.	Eosinophils	0.70%	1-6%
viii.	Lymphocytes	0.87/mm ³	0.87/mm ³
B. Liver Function Tests			
i.	SGOT	87 U/L(H)	14-36 U/L
ii.	ALP	183 U/L (H)	38-126 U/L
iii.	GGT	189 U/L (H)	12-43 U/L
iv.	Total Protein	0.50 g/dl (H)	6.3-8.2 g/dl
v.	Albumin	5.10 g/dl (H)	3.5-5 g/dl
C. Renal Function Tests			
i.	Serum Sodium	132 meq/L (L)	136-146 meq/L
ii.	Serum Chloride	90.75 meq/L (L)	101-109 meq/L

VITALS

PR: 94/min, RR: 22/min, BP: 170/110, Temp: 98.4%, SpO2: 98%

Based on the laboratory findings the patient was diagnosed with small cell Neuro

Endocrine Carcinoma of the lung with percutaneous transluminal coronary angioplasty (PTCA) in 2016. Drugs were started based on diagnosis as follows

S.No.	DRUG
i.	Inj ceftriaxone 1mg BD
ii.	Inj Ondansetron 4 ml TDS
iii.	Injection Pantoprazole 40 mg
iv.	Tab Atorvastatin 10 mg OD
v.	Tab Clopidogrel 75 mg OD
vi.	Tab Aspirin 75 mg HS
vii.	Syp Cody Chlorpheniramine maleate + codeine 100 ml TDS
viii.	Inj Furosemide 20 mg Stat
ix.	Inj Hydrocortisone 50mg TDS
x.	Inj Etofyllin +Theophylline 100mg BD
xi.	Neb Levosalbutamol + Ipratropium QID
xii.	Neb Budesonide BD
xiii.	Powder Ensure 4Tsf TDS
xiv.	Tab Amlodipine 5mg OD
xv.	IVF Dextrose sodium chloride solution 8 hourly
xvi.	Injection Levosulpiride 75 mg
xvii.	Tab Amlodipine 35 mg OD
xviii.	Tab Telmisartan 40 mg OD
xiv.	Tab Haloperidol 5mg stat

After the administration of Injection pantoprazole 40 mg patient developed rashes, itching, vomiting, burning sensation

in the whole body, restlessness, fever, and chills immediately within few hours. The injection was stopped immediately and the

symptoms got better after few hours. So, a culture test was done for checking hypersensitivity to pantoprazole, and the patient was advised to give his pantoprazole allergy history to the doctor in any other hospital before treatment.

DISCUSSION

Anaphylactic (Type 1) Hypersensitivity Reaction Due To Pantoprazole Administration^{13,14}

1. The drug comes in contact with B-cells containing IgE antibodies on the surface in the host body and this process is called sensitization

2. After Sensitization Plasma cells are released and after releasing these plasma cells also release IgE antibodies.
3. The IgE antibodies which are released binds firmly to the FC receptors of Basophil-mast cell leading to an influx of water and sodium hence damaging the cell membrane called mast cell degranulation.
4. The granules which are released after degranulation of mast cells release inflammatory mediators like vasoactive peptide (VIP), leukotrienes, neutrophils, eosinophils, and platelet-activating factors, etc leading to hypersensitivity symptoms^{13,14}. (figure- 1)

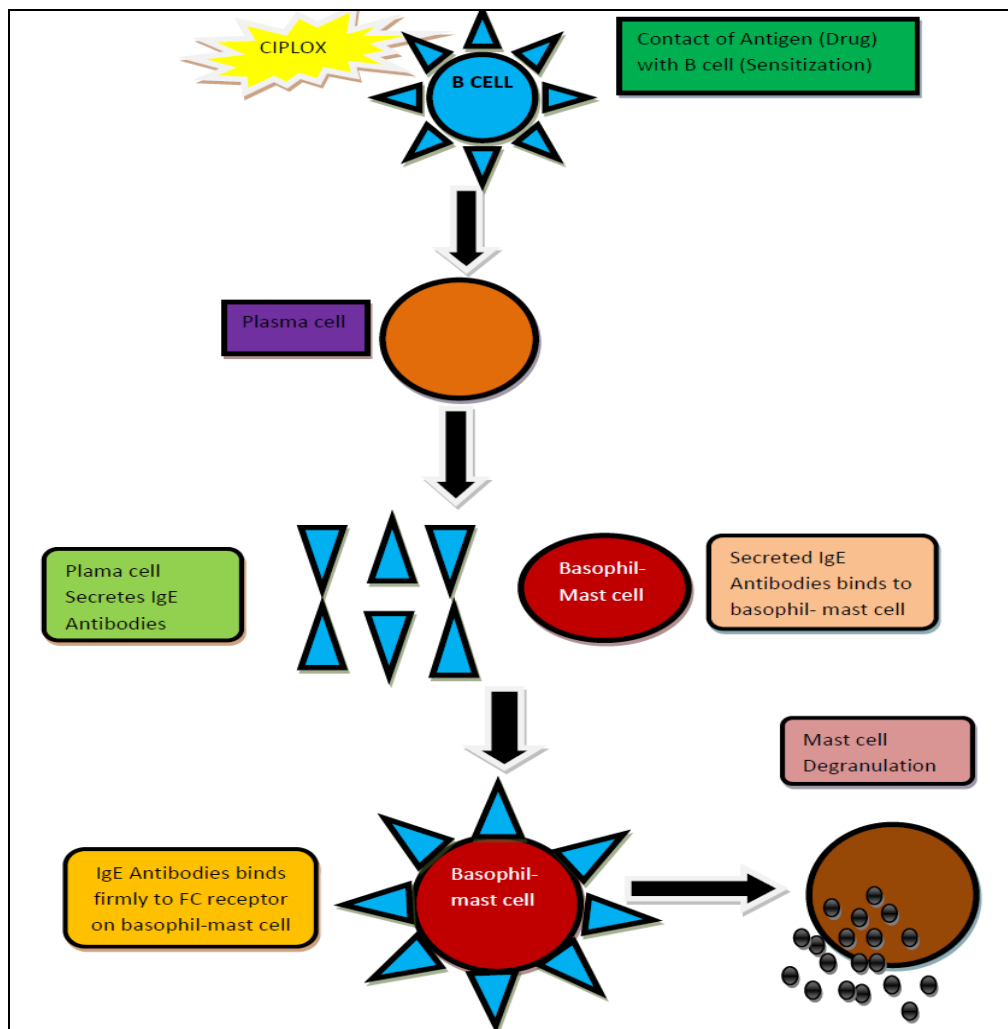


Figure 1: Type-1 Anaphylactic Hypersensitivity Reaction in Patient Due to Pantoprazole Drug

The incidence of hypersensitivity reaction from Proton pump inhibitors and H2 receptor antagonists is due to the excessive use of the drug as it is given as

OTC medication in India and can have various symptoms¹². In this case, the patient developed rashes, itching, vomiting, burning sensation in the whole body, restlessness,

fever, and chills. An anaphylactic reaction can also be life-threatening involving respiratory and cardiovascular problems¹².

Proton pump inhibitors like pantoprazole decrease gastric pH which increases bacterial growth in the oral cavity and upper GIT. PPI also inhibits H⁺/K⁺-ATPase which is present in the cell membrane of bacteria and fungi. This gives rise to the antimicrobial property of PPI for certain microbes. This change in the microbiome and intestinal bacterial composition along with suppression of gastric pH is found to be associated with allergic action of the proton pump inhibitors¹⁵.

CONCLUSION

It is concluded from the study that increasing use of Proton pump inhibitors is responsible for the anaphylactic hypersensitivity reaction while more detailed information is also required to check the incidence of such ADRs. To check on such ADR's health care professionals should keep an eye on the medication use and its effects and should be cautious while prescribing pantoprazole. Pharmacists should educate the patients regarding possible hypersensitivity reactions from PPIs and how to take these medications to avoid any serious adverse drug reaction.

Acknowledgement: We would like to thank Shri Devendra Das Ji Maharaj and Shri Mahant Indiresk Hospital for supporting us in case monitoring and reporting. We would also like to thank our mentor Dr, Madhulata Rana for the support.

Conflict of Interest: None

Source of Funding: None

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How to cite this article: Bahuguna R, Joshi D, Rana M. A case report on allergic reaction to pantoprazole. *International Journal of Science & Healthcare Research.* 2021; 6(4): 82-86. DOI: <https://doi.org/10.52403/ijshr.20211013>
