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Over prescription of Proton Pump Inhibitors on discharge of Medical Inpatients

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Abstract:

Background: *Proton pump inhibitors (PPIs) are the drugs used to treat and prevent acid peptic conditions. Their efficacy and safety profile has led to injudicious prescription of these drugs exposing patients to various potential risks and increased healthcare expenditure.*

Methodology: *A retrospective observational study was done from 10th January to 24th January, 2015 in Medicine Indoor in a tertiary care hospital to determine the trend of prescribing PPIs on discharge of Medical inpatients.*

Result: *We found 117 patients were discharged in the study period; 83 were male and 34 were female. Among them 102 (87.17%) were prescribed PPIs on their discharge. Mean age was 44.79 years. Among the study population only 29 patients (28.5%) truly needed PPIs during their discharge. The mean duration of prescribed PPIs was 28 days.*

Conclusion: *Amore rational prescription of PPI during discharge will have better impact on patient safety and health care expenditure.*

Key words: *Proton pump inhibitors (PPIs); prescription; over prescription, medical inpatients*

Introduction:

Proton Pump Inhibitors (PPI) are widely used anti ulcerant drugs. They are used for acid- peptic conditions like peptic ulcer, dyspepsia, gastro-esophageal reflux, stress ulcer prophylaxis etc.[1,2] PPIs are one of the most widely prescribed drug worldwide. There is a common belief about its higher safety profile. But recently, evidence is mounting against its safety. Potential harms like hypergastrinemia, gastrointestinal as well as respiratory infections and nutritional deficiencies are being found in long term PPI users. We have noticed the over prescription of PPIs in both our inpatient and outdoor settings. PPIs are now available as over the counter (OTC) drug in our country. So we tried to measure the over prescription of PPIs on discharge of Medical Inpatients from a tertiary care hospital in Dhaka, Bangladesh.

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Methodology:

This is a prospective cross sectional observational study. It was carried out in Dhaka Medical college Hospital from - 10.01.2015 to 19.01.2015. We audited the discharge certificates of all the units of Internal Medicine department only. Surgery, Gynaecology ward and wards of other sub-specialties were excluded. The demographic details of patients', cause of admission into hospital and drugs prescribed on discharge including PPI with duration were recorded. Statistical analysis was done using SPSS version 17.

Results:

During the audit period total 117 discharge certificates were collected from different wards of the department of Medicine. Out of 117, 102 discharge certificates (87.17%) had different Proton Pump Inhibitors with different duration. Only 15 discharge certificates did not bear any PPI. Mean age of the patients were 44.79 years ranging from 12 to 94 years. Of 117 patients, 83 were male and 34 were female (28.3%).Among the male patients, 74 (89%) received PPI; 28 (82%) of female patients had received PPI [Table-I]. Regarding indication, 26 patients (18.9%) received PPI for drug induced Peptic Ulcer Prevention, 3 patients (2.8%) received for Peptic Ulcer [Table-2]. On the audited discharge certificates PPI were prescribed for different duration ranging from 5days to 60 days [Table-III]. Figure 1 shows that patients with urinary tract infections were the highest population among infective cases who got PPIs on discharge (40%).We found various preparations of PPI in practice. Omeprazole was the most prescribed PPI [97 discharge certificates (95.3%)]. Pantoprazole and Esomeprazole were found in 2 prescriptions each (1.9%). Rabeprazole was prescribed in one discharge certificate (0.9%) [Table-IV].

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Table-I

Characteristics of cohort: PPI users vs. patients who were not prescribed PPI (n=117)

	Received PPI on discharge	Did not received PPI on Discharge	P value
Total patients	102 (87.17%)	15 (12.83%)	
Mean age (Years)	44.79+ 18.03	43.87+ 19.03	0.9
Sex: Male (n1=83)	74 (89%)	9 (11%)	0.0004
Female (n2=34)	28 (82%)	6 (18%)	

Table-II

Conditions where PPI was prescribed as per discharge certificate (n=102)

Rating of Indication of PPI	Presumed reason for recommendation of PPI	Number
Documented Indication	Ischemic Stroke on Aspirin	12
n1= 29 (28.5%)	Peptic Ulcer (endoscopy proven)	03
	IHD on Aspirin	07
	Chronic rheumatic heart disease on Warfarin	03
	Rheumatic Arthritis on steroid	01
	Acute Transverse Myelitis on Steroid	01
	Tubercular Pleural Effusion on steroid	01
	Acute Glomerulonephritis on steroid	01
No documented adequate indication	Infections	25
	Chronic Liver Disease	03
n2=73 (71.5%)	Uncontrolled Diabetes	07
	Psychiatric disorders	06
	COPD and Bronchial Asthma	05
	intestinal obstruction	03
	Malignancy	06
	Hemorrhagic Stroke	03
	Neurological disease other than stroke*	03
	Chronic Kidney Disease	05
	Hematological£	06
	Dilated Cardiomyopathy	01

*1 case of drug induced extrapyramidal syndrome and 2 cases of primary epilepsy.

£. 1 case each-Aplastic anemia, Hemophilia, Iron deficiency anemia, HbE disease, Non Hodgkins Lymphoma, Myelodysplastic syndrome.

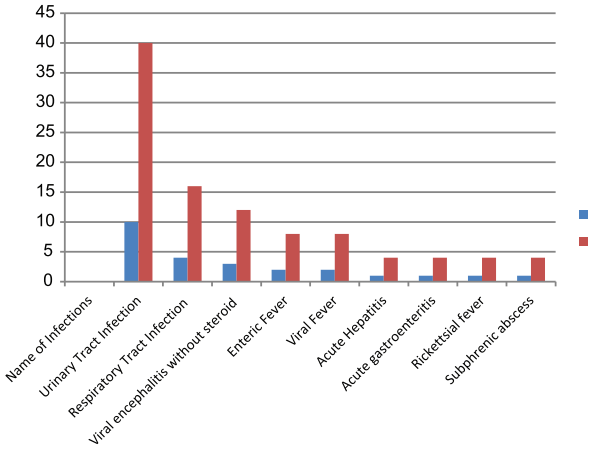

Fig.-1: *Types of infection who received PPIs : (n = 25)*

Table-III

Duration of PPI prescribed (in days)

Duration in days	Frequency	Percentage (%)
1-14	22	20.75
15-29	37	34.91
30-44	34	32.08
>=45	13	12.26

Table-IV
Types of PPI prescribed in the study population.

Types of PPI	Frequency	Percentage%
Omeprazole	97	95.3
Pantoprazole	2	1.9
Esomeprazole	2	1.9
Rabeprazole	1	0.9
Total	102	100

Discussion:

In our study we found 102 (87.17%) of study population were prescribed PPIs on their discharge though only 29 (28.5%) patients were truly needed PPIs. Rest (71.5%) are inappropriately prescribed PPIs, which is consistent with Muhammed Haroon et al.[3]Though the guidelines recommend PPIs for a few indications, we found a significant percentage in their discharge paper[4]. It can be said that patients with no clinical indication to use PPIs are only exposed to the risks of these drugs.[5]In our study we found males were more likely to receive than females, not consistent to the study done by Haroon et al and Brandhagen et al.[6]PPIs were prescribed in certain infections like urinary tract infections (40%), respiratory tract infections (16%), acute gastroenteritis (%) and enteric fever (12%). A case controlled study done by Gulmez et al found that there was an observed fivefold increased risk of development of community acquired pneumonia with initiation of PPI within a week prior to diagnosis.[7] Inappropriate prescribing of PPIs may also lead to Clostridium difficle associated diarrhoea and increased risk of hip fractures.[8] In our study The cumulative percentage of patients prescribed PPIs twice daily for up to 29 days was 55.66% and 32.08% for the duration of 30 to 44 days. A randomized double-blind trial done by Niklasson et al [9] found that 44% of the subjects in PPI therapy group who received PPI once daily for 28 days, developed dyspepsia compared with 9% of placebo group (p value<0.01). It suggests an association of PPI discontinuation and rebound acid hyper secretion. Similar trial over eight weeks of therapeutic period yielded 22% of subjects reported peptic symptoms like dyspepsia, heartburn and regurgitation at 10 to 12 weeks post therapy.[10] So it can be said that the over prescription of PPIs found in our study population may lead to many unwanted side effects. The mostly prescribed PPI was Omeprazole; which worth taka 5 on an average; so it takes tk300 for a single patient who takes Omeprazole twice daily for a month. Undoubtedly it is an extra expenditure for the poor population of Bangladesh. PPIs fall only behind the total cost expenditure worldwide, estimated at over US dollar 11 billion annually in USA and 2 billion euro in Britain.[11.12]In a nutshell it can be said that as long as the drug expenditure and safety concerns are the most important negative points, PPIs should be judiciously prescribed in a patient. Rational prescription of PPI not only reduces unnecessary health care expenditure but also positively ensures health safety.

Conclusion:

We have found that 71.5% of our study population were inappropriately prescribed PPIs during their discharge, which is really alarming. As it was a cross sectional study, potential long term adverse effects could not be assessed. Further large scale, randomized, prospective study is needed to quantify the hazard due to over prescription of PPIs and a care plan remains crucial in this regard.

Conflict of interest: None

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