PRACTICES OF PROTON PUMP INHIBITORS USE IN MEDICAL WARDS

Ghias Ul Hassan, Israr Ul Haque*, Muhammad Asim Hameed*, Farwah Javed*, Asif Mehmood*, Muhammad Shafiq*, Bilal Nasir*, Ghias Ul Nabi Tayyab*

Lahore General Hospital Lahore Pakistan, *Ameer Ud Din Medical Collage/PGMI Lahore Pakistan

ABSTRACT

***Objective*:** To determine the pattern of proton pump inhibitors (PPIs) use in medical wards.
Study Design: Prospective observational study.
Place and Duration of Study: Department of medical post graduate medical institute, study for 24 weeks, from 01 Nov 2014.
Material and Methods: One thousand eight hundred consecutive patients admitted in medical wards and emergency department were enrolled and followed during hospital stay and their discharge slips were analyzed without intervention in the management protocol of different primary consultants.
Results: Results were analyzed on SPSS version 20. Out of 1800 patients, 53.3% (n=960) were males and 46.7% (n=840) females, 72.6% (n=1306) had been prescribed PPIs. Major indications for the use of PPI were stress ulcer prophylaxis (32.5%), upper G.I bleeding (20.0%), acid peptic disease (12.5%), patients of GERD (8.1%) and NSAID use (7.5%). In 19.3% patients, indication of PPI use was not mentioned. Out of the admitted patients 57.7% patients were prescribed inject-able and 42.3% were given oral PPIs. There were 77.9% (n=1018) patients prescribed PPIs on discharge slips while duration of treatment and indication for their use were not mentioned on discharge slips for 66.3% (n=866) and 72.3% (n=944) patients, respectively.
Conclusion: PPIs are over used without clear indications in hospitalized and discharged patients.

Keywords: Inpatients, Medical ward, Practices, Proton pump inhibitors.

INTRODUCTION

Proton pump inhibitors (PPIs) are one of the most commonly prescribed medications in our medial wards, intensive care and outpatient departments. PPIs remain the leading evidence based therapy for upper gastrointestinal disorders, including gastro-oesophageal reflux disease, dyspepsia, peptic ulcer disease, nonsteroidal anti-inflammatory drug (NSAID) induced ulcer, eradication of *Helicobacter pylori*, and hypersecretory disorders such as Zollinger-Ellison syndrome[1,2]. There are several studies in the past two decades observing the use of acid suppressive medicines in hospital setting, and there is a general consensus that these medications are over prescribed frequently, often without appropriate indications[1–9]. In our daily practice we see that many patients admitted to the medical wards are given regular PPI without any clear indication and definitive duration for its use. Such inappropriate indications include non specific abdominal symptoms without acid related symptoms, co prescription with aspirin, NSAIDs or corticosteroids in asymptomatic patients with no risk of upper gastro intestinal bleed, most often receiving a long term repeat prescriptions for previous problems which had resolved long ago[6-10]. Studies analyzed the inappropriate use of intravenous (IV) PPIs in patients admitted to hospital[11]. Surprisingly, despite more than two decades of extensive literature addressing inappropriate PPI use, PPI over prescription remains prevalent from primary to tertiary care centers in many countries like Europe and the United States[12]. In the hospital setting, the prevalence of PPI over prescription has been reported to be between 61 to 86 per cent in recent Western studies[7,13].

Major indications for PPIs are treatment of gastro-esophageal reflux disease (GERD),

Correspondence: Dr Ghias Ul Hassan, Assistant Prof of Medicine Lahore General Hospital Lahore Pakistan
Email: ghiasulhassan@gmail.com
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Barrett's esophagus, acid peptic disease and eradication of *H. pylori* infection. In addition, PPIs are used for gastro-protection in patients using NSAID or aspirin in high risk patients. Another important indication is for stress ulcers prophylaxis in critically ill patients, Zollinger Ellison syndrome is a condition in which indefinite therapy is required, similarly PPIs are used in symptomatic and recurrent functional dyspepsia patients[2].

For most indications other than gastro-protection, severe reflux disease, Barrett's Esophagus and Zollinger Ellison syndrome, PPIs should only be used for 4–8 weeks[2], but it has been observed that use of PPIs is generally much longer[6-10]. Non-judicious PPIs use is a matter of great concern especially in elderly age group[13], who often have multiple co-morbidities, are taking multiple medications, and hence are at an increased risk of long-term PPI-related adverse outcomes, some investigators co-relate inappropriate and long term use of PPIs with pneumonia, *Clostridium difficile* infection, iron deficiency anemia, bloating, headache, hypergastrinemia and gastric polyps[14-19].

Our study will give insight to our doctors, especially working in teaching hospitals and community in general, about the current practices of PPIs use and will be helpful in reviewing our strategy about PPIs use.

PATIENTS AND METHODS

Inclusion Criteria

Both male and female patients with age >18 yrs admitted in Medical wards and Emergency Department of Lahore General Hospital Lahore during the study period.

Exclusion Criteria

Patients already taking PPIs or acid suppression therapy before hospital admission. Patients readmitted during study.

Data Collection Procedure

Daily visits to all Medical wards and Emergency department were made with particular interest to look for PPI prescription, route & indications for use. Discharge notes of all patients taking PPI were also reviewed. After informed consent, data were collected on predesigned proforma without any intervention in the management protocols of different teams of medical departments.

Sample Size

Total 1800 patients were enrolled in the study. The sample size was calculated by using WHO sample size determination software with 30% prevalence of inappropriate use of PPIs at 99% confidence interval and 3% margin of error.

Data Analysis Procedure

Categorical variables like gender, PPI use, Indication, duration, route, PPIs on discharge slips etc. were presented in the form of frequencies and percentages. Whereas continuous variable like age was expressed as groups. Data were entered and analyzed through Statistical Package of Social Sciences (SPSS) version 20. Results are shown in table.

RESULTS

Out of total 1800 patients 53.3% (n-960) were males and 46.7% (n=840) were females, 1306 (72.6%) patients were using PPIs and female (n=666) patients were slightly more than males (n=640), majority of patients who were using PPIs were in age group between 36 to 45 years i.e. 29.9% followed by age group of 25 to 35 years i.e. 22.3%, less than 25 years was the least represented age group i.e. 8.8%. Major indications for the use of PPI in hospital admitted patients were stress ulcer prophylaxis (32.5%), upper GI bleeding of any etiology (20.0%), acid peptic disease (APD) (12.5%), clinically and endoscopically diagnosed patients of GERD (8.1%) and NSAID use (7.5%). In 19.3% of patients no indication for PPI use was mentioned on hospital chart, 57.7% patients were prescribed injectable and 42.3% were given oral PPI during hospital stay. About 77.9% (n=1018) were also prescribed PPIs on discharge slip as well, among these discharged patients in 66.3% (n=866) patients duration of treatment and in

72.3% (n=944) indications for use were not mentioned on their discharge slips.

DISCUSSION

PPIs are one of the most commonly prescribed medications in our hospital settings and most of the times they are prescribed for nonspecific indications and for longer or undefined periods. To date little information is available on the prescription patterns of PPIs in hospitalized patients in our Pakistani community. International studies show high rates of unjustified use of PPIs in community based and tertiary care hospitals. We studied 1800 patients who got admitted through Emergency and Outpatient Departments to medical floor to see the pattern of PPIs use during admission and at the time of discharge.

Table: Characteristics of the patients.

	N	Percentage (%)
Gender		
Male	960	53.3%
Female	840	46.7%
Age Group		
<25	158	8.8%
25–35	402	22.3%
36–45	538	29.9%
46–55	334	18.6%
56–65	172	9.6%
>65	196	10.9%
Use of PPI		
Yes	1306	72.6% Male n-640 Female n-666
No	494	27.4% Male n=240 Female n=254
Indication of PPI used in Hospital		
GERD	106	8.1%
NSAID / Aspirin use	98	7.5%
Stress Ulcer Prophylaxis	424	32.5%
APD	164	12.5%
Upper G.I Bleeding	262	20.0%
Not mentioned*	252	19.3%
Route		
I/V	753	57.7%
Oral	553	42.3%
PPI on discharge slip		
Yes	1018	77.9%
No	288	22.0%
Duration Mentioned on discharge		
Yes	440	33.7%
No*	866	66.3%
Indication Mentioned on discharge		
Yes	362	27.7%
No*	944	72.3%

***Injudicious Use:** This includes patients who were prescribed PPIs without indication during hospital stay and on their discharge cards indication and duration of treatment were not mentioned.

We found that PPIs are prescribed very commonly in our setting usually on discharge slips without clear indications and definite duration of use. This increases total cost of treatment which poses financial burden on patients especially those with poor socio-economic status who come to government

hospitals for their treatment. Over use of PPI is also a burden on already weak health care system and leads to many side effects[14-19]. Our physicians should be aware of these potential adverse effects and they should ensure that PPIs are used where benefit clearly outweighs any potential side effects.

In our study 72.6% of our hospital patients were prescribed PPIs which is significantly higher as compared to 53% reported in an international study done in Singapore[2] but similar pattern (82.6%) has been observed in a Spanish study[9].

We found that 19.3% patients had no proper documentation of indications on hospital treatment chart. Whereas a study by Reid et al find out that 61% lacked an adequate diagnosis to justify the prescription of PPIs[7]. It may be due to the fact that most of the proposed indications for which PPIs were being used, the diagnoses were made clinically, without objective evidence and patients were prescribed PPIs for some unjustified proposed indication, like patients with upper gastro intestinal bleed of any etiology were receiving PPIs, similarly low risk patients who are using NSAIDs/Aspirin, in whom there is almost negligible chances of gastro intestinal bleeding, stress ulceration prophylaxis in every patients of stroke irrespective of degree of coma or other patients who are not candidates for stress ulcer prophylaxis, so the actual magnitude of problem of using PPIs without any definitive indication might be higher, if the indications for which PPIs were prescribed on treatment charts were critically analyzed.

In our study 57.7% patients were taking PPIs by intravenous route. This was much lower in comparison to a study in United Kingdom (UK) which reported it to be 75.4%[20]. A similar trend (71.7%) was reported from a study in Saudi Arabia[21]. This explains high usage of parenteral mode of drug delivery as a generalized trend in medical practice, both patients and at times doctors prefer injectable medications without any clear indication, even when equally effective oral drugs are available. Patients with bleeding peptic ulcers, gastric hyper secretory syndromes and patients who are nil by mouth and have valid indication for PPIs use may benefit from parenteral delivery of PPIs, in all other patient groups generally oral PPIs are sufficient.

In our study the indications for PPIs use were stress ulcer prophylaxis in 32.5% of patients, which was quite different from a recent international study at France[22] which showed that 17% of the patients were prescribed PPIs for stress ulcer prophylaxis, it is because of the fact that most of the patients in our study who were given PPI for stress ulcer prophylaxis had no appropriate indication for prophylaxis, similarly those who recovered from their critical conditions and did not need any more prophylaxis were continued on PPI, similarly 25% of patients were given stress ulcer prophylaxis in a study by Hussain et al[23]. In our study 7.5% of the patients were being prescribed PPIs with NSAIDs/ Aspirin which is quite low as compared to French study which showed 23% patients using NSAIDs along with PPIs without any risk of bleeding[22]. About 12.5% patients were taking PPIs in our study for acid peptic disease and dyspeptic symptoms which is quite lower as compared to French survey i.e. 33.0%, the reason could be that most of the patients with dyspeptic symptoms generally are being treated in outpatient departments[22]. In our study no indication for PPI use was found among 19.3% admitted patients which is quite similar to the study done by Reid et al. who reported that 19.0% patients had no any indication for PPI use[7].

In our study 77.9% patients were prescribed PPI on discharge slips, among these 66.3% were prescribed the medicine without clear mentioning the duration of its use and in 72.3% indication for use was not mentioned on discharge slips. Ramirez et al[9] showed that 54.75% patients on discharge from hospital were prescribed PPIs as compared to 77.9% in our study, so in our study significantly higher number of admitted patients got discharged from hospital on PPIs as compared to international

studies, similarly Ramirez et al[9] showed 80.2% of patients were prescribed PPIs inappropriately at discharge like in our study (72.3%) Proper discharge slip with clear instructions showing indication and duration of use of each medicine counter signed by senior doctor is necessary to avoid such practice. In our community most of our patients had no regular follow up protocols and they continue to use their medications without supervision for indefinite period and for poorly defined indication leading to side effects and extra cost.

The current study has limitations, we acknowledge that determining appropriateness or validity of an indication based on physician documentation and merely exploring clinical records alone might have led to overestimation of different indications as well as inappropriate PPI use in our study.

CONCLUSION

PPI are over prescribed in medical practice for poorly defined indications and for unjustified definite duration leading to potential side effects and extra cost.

Guidelines for appropriate prescription of PPI and route of administration should be implemented and it should also be followed up at discharge of patient from hospital and at follow up visits.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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