

The Use of Proton Pump Inhibitors and Prescription Pattern by Practicing Physicians at an Academic Hospital

Mohammed A. Basheikh, MBBS, ABIM Certified, FACP

Department of Internal Medicine, Faculty of Medicine
King Abdulaziz University, Jeddah, Saudi Arabia

Correspondence

Dr. Mohammed A. Basheikh
P.O. Box 80215, Jeddah 21589, Saudi Arabia
e.M: mbasheikh@kau.edu.sa

Submission: 25 June 2017

Accepted: 10 July 2017

Citation

Basheikh MA. The use of proton pump inhibitors and prescription pattern by practicing physicians at an academic hospital. *JKAU Med Sci* 2017; 24 (4): 9-14. DOI: 10.4197/Med. 24.4.2

Abstract

The introduction of proton pump inhibitors has revolutionized the management of acid-related gastrointestinal disorders. Physicians use different regimens when prescribing proton pump inhibitors. In this study we aim to determine the prevalence and pattern of proton pump inhibitors prescription among practicing physicians at King Abdulaziz University Hospital in Jeddah, Saudi Arabia. A cross-sectional study was performed at different levels of doctors ranging from consultants to house officers from March-May 2014. The study included 85 doctors. The prevalence of proton pump inhibitors prescription was 57.65%. Most of the respondents are internal medicine physicians with 58.62% (29 physicians) of them prescribing proton pump inhibitors. As well, half of the surgeons (24) were prescribing proton pump inhibitors. 54.17% of house officers who participated were prescribing proton pump inhibitors. Omeprazole at a dose of 20 mg is the most commonly prescribed by 49.41%, followed by the dose 40 mg prescribed by 41.18%. The rate of prescription for proton pump inhibitors at King Abdulaziz University Hospital with different specialties and levels is comparable to the practice worldwide. It's noted that house officers are prescribing proton pump inhibitors; they will need to be educated about the use, dosage, and side effects of proton pump inhibitors.

Keywords

Proton pump inhibitors; Prescribers; Prevalence; Academic hospital

Introduction

Proton pump inhibitors (PPI) are one of the most frequently prescribed classes of drugs in the world because they combine a high level of efficacy with low toxicity. Proton pump inhibitors became widely available in the early 1990s, and they generally appeared to be superior to the histamine₂-receptor antagonists in acid-suppressing activity, symptom control and healing.

Proton pump inhibitors are substituted benzimidazoles and are generally administered as enteric-coated tablets or capsules that pass through the stomach intact and are absorbed in the proximal small bowel. Once absorbed, all PPIs have a relatively short plasma half-life of 1-2 hours. Their duration of action is much longer because of their unique mechanism of action^[1]. Most physicians now use proton pump inhibitors as a first-line treatment for many patients with acid-peptic disorders, including erosive gastro-

esophageal reflux disease (GERD), non-erosive reflux disease (NERD) and duodenal and gastric ulcers^[2]. Despite the widespread use of PPI therapy, physicians often dose these medications suboptimally^[3,4].

In this study we tried to survey how frequently and at what doses PPI is prescribed among health care workers at King Abdulaziz University Hospital, which is the largest teaching hospital in Jeddah.

Method

A secondary analysis of a cross-sectional study was performed to determine the knowledge and awareness about the use of PPI. The same questionnaire ascertained the prescribing patterns of proton pump inhibitors at different levels of practicing physicians at King Abdulaziz University Hospital (KAUH) in Jeddah, Saudi Arabia from March 2014-May 2014. We aimed to focus on the prescription pattern of oral PPI in the following specialties: internal medicine (IM), surgery, emergency medicine (ER), and obstetrics/gynecology (OB/GYN) departments. The departments that only prescribe PPI as intravenous (*e.g.*, critical care) were excluded. Also excluded were the departments that did not have a dedicated ground rounds like ear-nose-throat (ENT) surgeons. The ground rounds for the concerned departments were targeted to distribute the questionnaire among the attendees, and the distribution was on a random sample in the concerned departments. We excluded pediatricians as they have different dosages for the pediatric patients compared to adult patients. The study included 85 doctors, ranging from consultants to house officers. The house officers are fresh new graduates from medical school, who are doing their mandatory year after graduation. The residency level is postgraduate in-training physicians at different levels of training. The specialists finished their training and are board eligible to be certified in either a major specialty or in a sub-specialty in the future. The consultants are those who finished their training and they are certified in a specialty or sub-specialty with a number of years' experience. The survey instrument which was a paper questionnaire consisted of the following variables: specialty, level of staff, PPI prescription, the usual oral dose for the routine prescription for GERD patients on their 1st presentation, and the PPI prescription for gastritis and esophagitis. Two questions we focused on in this study "have you ever prescribed PPI?" "what is the usual oral dose that you prescribe routinely for GERD patients on their 1st presentation?" Omeprazole that is

set as example of PPI was written in the questionnaire, with example doses of 10 mg, 20 mg, and 40 mg. The reason for this is because of the availability at KAUH pharmacy. To generate the results Microsoft Excel 2016 was the choice, and descriptive statistics were used to summarize the findings.

Results

Distribution of Respondents According to their Answers

Specialty

Table 1 shows that most of the respondents are "Internal Medicine" with 34.12% of total respondents. Surgery specialists represent 28.24% of the sample. The other specialties OB/GYN and ER represent 7.01% together. Thirty percent (30%) of the sample gave no answer, which they are house officers or general practitioners.

Level of Medical Doctors Participated

Table 2, house officers represent 28.24% of the sample. All years of residents training accounted for 48.24% of the sample. 11.76% were specialist.

Have you prescribed PPI?

Forty-nine of the respondents which represent 57.65% of the sample prescribed PPI, and 35 doctors which is 41.2% of the sample did not prescribe PPI. Only 1 (1.17%) did not respond to this question.

What is the usual Dose?

The dose 20 mg is the most commonly prescribed by 49.41% (42 doctors) from the total, and the dose 40 mg was prescribed by 41.18% (35 doctors). The least frequent dose is 10 mg with a percentage 8.24% (7 doctors). One (1.17%) did not answer.

Differentiation Based on Specialty

Table 3 showed that 57.65% of all specialty doctors had answered that they have prescribed PPI, 58.62% of Internal medicine and 50% of general surgery have also prescribed PPI. Only two ER physicians participated in the study and both had prescribed PPI.

Discussion

Our study showed that more than half of the participants in the study representing different specialties from different levels at KAUH prescribed oral PPI. In addition to that most of the respondents are internal medical

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Table 1. Distribution of respondents according to their specialties.

Specialty	Number of Participants	Percentage (%)
Medicine	29	34.12%
Surgery	24	28.24%
Obstetrics and Gynecology	4	4.71%
Emergency Room	2	2.35%
Not Answered	26	30.58%
Total	85	100.00%

Table 2. Distribution of respondents according to their levels.

Levels	Number of Participants	Percentage (%)
Residents in First Year	15	17.65%
Residents in Second Year	6	7.06%
Residents in Third Year	10	11.76%
Residents in Fourth Year	6	7.06%
Residents in Fifth Year	4	4.71%
Consultant	3	3.53%
Specialist	10	11.76%
House Officer	24	28.24%
General Practitioner	2	2.35%
Not Answered	5	5.88%
Total	85	100.00%

Table 3. Specialty versus Have you prescribed proton pump inhibitor.

Specialty		Have You Prescribed Proton Pump Inhibitor?			Total
		Yes	No	Not Answered	
Medicine	Count	17	11	1	29
	% within Specialty	58.62%	37.93%	3.45%	100.00%
Surgery	Count	12	12	0	24
	% within Specialty	50.00%	50.00%	00.00%	100.00%
Obstetrics and Gynecology	Count	3	1	0	4
	% within Specialty	75.00%	25.00%	00.00%	100.00%
Emergency Room	Count	2	0	0	2
	% within Specialty	100.00%	00.00%	00.00%	100.00%
General Practitioner	Count	2	0	0	2
	% within Specialty	100.00%	00.00%	00.00%	100.00%
House Officer	Count	13	11	0	24
	% within Specialty	54.17	45.83	00.00%	100.00%
Total	Count	49	35	1	85
	% within Specialty	57.65%	41.18	1.17%	100.00%

physicians and more than half are prescribing PPI. Also, half of the surgeons were prescribing PPI to their patients.

The prevalence of PPI prescription was 57.65% and this percentage is within what has been published by other comparable studies, which is 30.4-66.6%^[5-8]. In this study, most of the respondents who prescribed PPI are physicians or surgeons (59.18% combined) which is comparable with other publications where they described the indication of prescribing PPI was mainly for internal, and postoperative medicines^[9]. Regarding the level of the respondents, we noticed that house officers represent the major sector (28.24%), which is a bit higher than what has been reported in the literature (13.30%)^[10].

Regarding the prescribed dose, the PPIs 20 mg and 40 mg are the highest prescribed doses within the different doses (10-40 mg). It is reported that in general, a higher rate of relapse of symptoms was linked with lower doses of omeprazole^[10]. This might be the reason that the 20 mg and 40 mg are the most common doses reported in our survey, which is similar to what has been shown before. However, the 10 mg dose was not commonly used by participants in this study, this can be explained by the fact that pediatricians are the ones commonly using this small dose and none of the pediatricians participated in our study.

Most of the house officers who participated in the study had prescribed PPI. However, it is not clear if those house officers fully understand the possible side effects of PPI and the proper doses that should be prescribed according to the indication. One possible explanation for this high rate of prescription of PPI among house officers could be that the house officer is following an order of a senior staff to prescribe PPI. Now with the reports of the link between the use of PPI and dementia^[11], and other side effects. Specialty professional organizations recommend that people take the lowest effective dose possible to achieve the desired therapeutic result when using proton pump inhibitors to treat gastroesophageal reflux disease long-term^[12]. In the United States, the Food and Drug Administration advises that no more than three 14-day treatment courses should be used in one year^[13].

Proton pump inhibitors were considered a safe medication to prescribe, but with the increasing new development of side effects and warnings in black box by the FDA with the use of clopidogrel, it is essential

that we be more cautious in prescribing PPI. As it shows in our study that junior physicians are commonly prescribing PPI, we need to either limit the house officers from prescribing PPI or educate them enough about the proper uses and correct dosage of PPIs.

Limitations

Despite the efforts to include different prescriber categories including medical physicians, surgeons, OB/GYN, and ER, one critical point that limits our study is that the overall response rate for the survey was low. Our results may thus underestimate or overestimate the overall prescription of PPI by doctors. Another limitation is the absence of linking between the different diseases grades and the prescribed doses.

Conclusion

The rate of prescription for PPI in this academic institute is the same as the practice worldwide. It's noted that house officers are prescribing PPIs; they will need to be educated about the use, dosage, and side effects of PPI. Future studies are needed to find out the differences in the pattern and frequency of PPIs prescription among academic and non-academic prescribers.

Conflict of Interest

The author has no conflict of interest.

Disclosure

The author did not receive any commercial or financial support for this study. The author has no financial interest in any of the products, devices, or drugs mentioned in this article.

Ethical Approval

Obtained.

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استخدام الأدوية المثبطة لإفراز البروتون بين الأطباء في مستشفى أكاديمي

محمد عبدالرحمن باشيخ
قسم الطب الباطني، كلية الطب
جامعة الملك عبدالعزيز
جدة - المملكة العربية السعودية

المستخلص. لقد أدى إدخال مثبطات مضخة البروتون إلى إحداث ثورة في إدارة اضطرابات الجهاز الهضمي المرتبطة بالحمض. يصف الأطباء جرعات مختلفة عند وصف مثل هذه الأدوية. في هذه الدراسة نهدف إلى تحديد انتشار ونمط الوصفة الطبية لمثبطات مضخة البروتون بين الأطباء في مستشفى أكاديمي. تم إجراء تحليل لدراسة مقطعية على مستويات مختلفة من الأطباء بدءاً من استشاريين إلى أطباء الامتياز في مستشفى جامعة الملك عبد العزيز بجدة، المملكة العربية السعودية من مارس إلى مايو ٢٠١٤م. شملت الدراسة ٨٥ طبيباً. وكان معدل انتشار وصفة مثبط مضخة البروتون ٥٧,٦٥٪. أكثر من تجاوب مع الإستبيان هم أطباء الطب الباطني و ٥٨,٦٢٪ منهم يصفون مثبطات مضخة البروتون. أيضاً، نصف الجراحين كانوا يصفون مثبطات مضخة البروتون لمرضاهم. وأكثر من نصف الأطباء الأمتياز شاركوا كانوا يصفون مثبطات مضخة البروتون. الجرعة من (٢٠ ملغ) هي الأكثر شيوعاً الموصوفة بنسبة ٤٩,٤١٪، والجرعة (٤٠ ملغ) وصفت ٤١,١٨٪. معدل الوصفة الطبية لمثبطات مضخة البروتون في هذا المستشفى الأكاديمي هو مقارب للممارسة في جميع أنحاء العالم. ويلاحظ أن أطباء الامتياز يكتبون مثبطات مضخة البروتون. فإنهم يحتاجون إلى تعلم طريقة الاستخدام، جرعة، والآثار الجانبية من مثبطات مضخة البروتون.