



The Outpatient Prescribing Pattern of Aluminum - Magnesium Hydroxide Antacid

Nehad J. Ahmed^{1*} and Menshawy A. Menshawy²

¹*Department of Clinical Pharmacy, College of Pharmacy, Prince Sattam Bin Abdulaziz University, Alkharj, Saudi Arabia.*

²*Department of Medicinal Chemistry, College of Pharmacy, Prince Sattam Bin Abdulaziz University, Alkharj, Saudi Arabia.*

Authors' contributions

This work was carried out in collaboration between both authors. Author NJA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors NJA and MAM managed the analyses of the study. Author NJA managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Objective: The present study aims to explore the prescribing trends of aluminum hydroxide - magnesium hydroxide in the outpatient setting.

Methods: This is a cross-sectional study that was conducted in a public hospital in Al Saih. Prescription data was collected retrospectively from electronic patients records in the outpatient section of the hospital.

Results: A total of 146 outpatients received aluminum hydroxide - magnesium hydroxide antacid between 1st of July till the end of December 2018. Most of the patients were female (61.64%). Out of the 146 prescriptions, 145 were written by residents (99.32%) and only 1 prescription was written by a specialist (0.68%). Most of the prescriptions were written by emergency department (91.79%).

Conclusion: The use of aluminum hydroxide - magnesium hydroxide was uncommon but it should be prescribed carefully and a continuous assessment of its prescribing is required to prevent its adverse events and drug interactions.

*Corresponding author: E-mail: pharmdnehadjaser@yahoo.com, n.ahmed@psau.edu.sa;

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1. INTRODUCTION

Antacids are a group of medications that have been on the market for several years. They were initially considered a first-line defense against peptic ulcer; nevertheless, the discovery of other drugs such as proton pump inhibitors changed peptic ulcer disease management [1]. At present, antacid is mainly used to the relief of mild intermittent gastroesophageal reflux disease (GERD) associated heartburn [2]. The global antacids market size was worth \$ 5.9 billion in 2018 and it is expected to reach about \$ 7.6 billion by 2026 [3]. The increasing use of antacids is due to several factors including the Increasing prevalence of gastroesophageal reflux disease and the rising prevalence of heartburn [3].

Antacids help to treat mild indigestion. They work by changing the stomach acid that causes heartburn [1,2]. Undoubtedly, antacids have major roles to play in the treatment of gastric acid related disorders. They have clear advantages and disadvantages when compared with the antisecretory agents [4]. They are available in different forms including liquid and chewable tablets and they are obtainable in shops and pharmacies without a prescription [5]. There are several types of antacids; common types include magnesium carbonate, aluminium hydroxide, magnesium trisilicate, calcium carbonate, magnesium hydroxide and sodium bicarbonate [5]. Aluminum hydroxide and magnesium hydroxide are antacids that are used together to relieve upset stomach, heartburn and acid indigestion. They may be used to treat these symptoms in patients with esophagitis, peptic ulcer, hiatal hernia, gastritis and gastric hyperacidity because they combine with stomach acid and neutralize it [6].

The process of medication prescribing is complex and includes several aspects such as deciding that a drug is indicated, choosing the correct drug, determining the appropriate dose and regimen according to the patient's physiologic status, monitoring for toxicity and effectiveness, educating the patient about the anticipated side effects and determining when the patient need consultation [7]. Using medications inappropriately leads to several avoidable adverse drug events [7]. A previous study stated that among 384 older veterans, 44 percent were found to have at least one

unnecessary drug therapy at the time of discharge due to several factors such as the routine use of some medications during hospitalization such as antacids and stool softeners [8]. Side effects from Aluminum Hydroxide, Magnesium Hydroxide include diarrhea, constipation, loss of appetite, unusual tiredness, and muscle weakness [9].

In order to prescribe antacids such as aluminum hydroxide - magnesium hydroxide it is important to know their prescribing trends. So, the present study aims to explore the prescribing trends of aluminum hydroxide - magnesium hydroxide in the outpatient setting in Al Saih.

2. METHODOLOGY

This is a cross-sectional study that was conducted in a public hospital in Al Saih. Al Saih is the capital of modern Al-Kharj and its administrative and economic center and located in the southeast of the capital Riyadh. Prescription data was collected retrospectively from electronic patients records in the outpatient section of the hospital.

All patients who received aluminum hydroxide - magnesium hydroxide antacid in the outpatient setting between 1st of July till the end of December 2018 were included in the study. So, the records of patients who didn't receive aluminum hydroxide - magnesium hydroxide antacid and the records of patients in other settings were excluded from the study.

The data was collected using Excel sheet from the medical records and after that they were analyzed descriptively and represented as percentages and numbers.

3. RESULTS AND DISCUSSION

A total of 146 outpatients received aluminum hydroxide - magnesium hydroxide antacid between 1st of July till the end of December 2018. Most of the patients were female (61.64%). Most of them aged between 20-39 years; the age of 25.34 % of them was between 20 -29 and the age of 24.66% of them was between 30-39. The patients' personal data are shown in Table 1.

Out of the 146 prescriptions, 145 were written by residents (99.32%) and only 1 prescription was written by a specialist (0.68%). The level of the prescribers is shown in Table 2.

Most of the prescriptions were written by emergency department (91.79%) and about 5.48 % were written by nephrology department. The prescribing departments are shown in Table 3.

Most of patients received aluminum hydroxide - magnesium hydroxide antacid tablet (81.51%) and 13.01% of them received chewable tablet. Dosage forms of the prescribed aluminum hydroxide - magnesium hydroxide antacid are shown in Table 4.

The prescribing of aluminum hydroxide - magnesium hydroxide antacid was uncommon and its prescribing was in adults more than other age groups. Similarly, Roberts and Bateman

reported that during the year of their study, antacids were prescribed for 3.9% of the study population [10]. They also state that antacid prescribing rates for women were over twice those for men amongst those aged 15–34 years [10].

In contrast, another study used a questionnaire about the use of antacids in a general population and reported that approximately 10% of the population had used antacids during the preceding 14 days and that there was no overall gender difference in the use of antacids [11]. Another study reported that among the general Danish population, 23% of the adults were using either antacids or alginates and only 14% were using proton pump inhibitors [12].

Table 1. Personal data of the patients

Variable	Category	Number	Percentage
Gender	Male	56	38.36
	Female	90	61.64
Age	Less than 10	7	4.79
	10-19	19	13.01
	20-29	37	25.34
	30-39	36	24.66
	40-49	23	15.75
	50-59	12	8.22
	More than 59	12	8.22

Table 2. The level of the prescribers

Level of the prescriber	Number	Percentage
Consultant	0	0.00
Resident	145	99.32
Specialist	1	0.68

Table 3. The prescribing departments

Department	Number	Percentage
Ear, nose, and throat	1	0.68
Emergency	134	91.79
Gastroenterology	1	0.68
Internal Medicine	1	0.68
Nephrology	8	5.48
Obstetrics & Gynecology	1	0.68

Table 4. Dosage forms of the prescribed aluminum hydroxide - magnesium hydroxide antacid

Dosage forms	Number	Percentage
Tablet	119	81.51
Suspension	8	5.48
Chewable Tablet	19	13.01

Most of the patients receiving aluminum hydroxide - magnesium hydroxide antacid in the present study aged between 20-49 years. Suárez-Varela et al reported that the proportion of drug prescriptions increased with age in both sexes in prescribing antacids and that antacid were prescribed mainly for gastritis followed by duodenal ulcer and gastric ulcer [13]. It is important to prescribe aluminum hydroxide - magnesium hydroxide antacid correctly to prevent its adverse events and drug interactions. Side effects from Aluminum Hydroxide, Magnesium Hydroxide include diarrhea, constipation, loss of appetite, unusual tiredness, and muscle weakness [9]. Regarding interactions, several drugs may interact with this drug such as phosphate supplements and sodium polystyrene sulfonate [14]. Additionally, antacids can interfere with the absorption of many other drugs [14].

4. LIMITATION

The limitation in the present study was that the diagnosis was not written in the electronic patients' records.

5. CONCLUSION

The use of aluminum hydroxide - magnesium hydroxide was uncommon and its prescribing was in adults more than other age groups. It should be prescribed carefully and a continuous assessment of its prescribing is required to prevent its adverse events and drug interactions. Moreover, the health care providers should improve their knowledge about this drug by attending workshops and conferences about it.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

The study was approved by the hospital ethical committee with a log number 20-131E.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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