National Journal of Physiology, Pharmacy and Pharmacology

RESEARCH ARTICLE

Prescription analysis of both H_1 and H_2 antihistamines among in-patients of dermatology department of a tertiary care teaching hospital in a coastal town of South India

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Received: May 19, 2016; **Accepted:** Jun 10, 2016

ABSTRACT

Background: Antihistamines are one of the commonly used drugs for treating dermatological disorders. Periodic evaluation of prescribing patterns can increase the therapeutic efficacy, decrease adverse effects, and provide feedback to prescribers. **Aims and Objectives:** The objective of the present study was to evaluate the prescribing pattern of both H_1 and H_2 antihistamines in in-patients of dermatology department in a tertiary care teaching hospital. **Materials and Methods:** A prospective observational study was carried out in the Department of Dermatology of Vinayaka Missions Medical College and Hospital, Karaikal. A total of 291 prescriptions belonging to in-patients of dermatology department were scrutinized during the study period. Patient's age, sex, and pattern of skin diseases reported and trends in antihistaminic drug usage as monotherapy or as combinations were analyzed. Most common adverse effects of the prescribed antihistamines were graded, and data were expressed as absolute numbers and percentages. **Results:** Out of the total 291 prescriptions screened, 213 (73.2%) contained at least one antihistaminic drug. The majority of patients were in the age group of 41-50 years (26.83%) followed by 31-40 years (22.36%). Psoriasis, eczema, and allergic contact dermatitis were the top three disorders for which antihistamines were prescribed. Overall second-generation H_1 antihistamines were prescribed more commonly than their first-generation counterparts. The most commonly prescribed antihistamine as monotherapy was cetirizine (59.62%) and combination was pheniramine + cetirizine (16.43%). H_2 blockers were prescribed to 91 patients (42.7%), ranitidine being the one and only H_2 blocker prescribed. **Conclusion:** Second-generation antihistamines were more commonly prescribed compared to first-generation drugs. Cetirizine was the most commonly prescribed antihistamine, and pheniramine + cetirizine was the most prescribed combination. A substantial number of patients were prescribed H_2 blockers also which indicates the higher proportion of resistant dermatological conditions.

KEY WORDS: Cetirizine; H_2 Blockers; Pheniramine; Psoriasis; Second-generation Antihistamines

Access this article online	
Website: www.njppp.com	Quick Response code
Doi: 10.5455/njppp.2016.6.0513610062016	

INTRODUCTION

Rational drug prescribing is defined as the use of the least number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost.[1] The assessment of drug utilization is important for clinical, educational, and economic purposes and even after a more stringent drug regulation and

availability of drugs, irrational drug prescribing are still a concern all over the world, more so in developing countries like India.[2] Prescribing patterns need to be evaluated periodically to increase the therapeutic efficacy, decrease adverse effects, and provide feedback to prescribers.[3]

Skin diseases in developing countries have a serious impact on people's quality of life, and it is more so in India where climate, socio-economic status, religions, and customs are widely varied in different parts of the country.[4] In India, the most prevalent dermatological condition include but not limited to dermatitis, urticaria, infections, acne, psoriasis, alopecia, and conditions such as skin cancer and adverse drug reaction on the skin are less prevalent.[5]

Antihistaminic drugs are one of the most frequently and widely used systemic medications in dermatological disorders apart from corticosteroids and antibiotics.[6] They are especially valuable in treating skin disorders mediated by histamine and are primarily used for the symptomatic relief of allergic reactions such as urticaria, angioedema, rhinitis, conjunctivitis, and pruritus associated with skin disorders.[7] Usually, it is the H_1 antihistamines, which are commonly used in dermatological disorders but sometimes in-patients with resistant cases, even H_2 antihistamines commonly referred as H_2 blockers are also used.

The older first-generation H_1 antihistamines penetrate readily into the brain to cause sedation, drowsiness, fatigue, and impaired concentration and memory causing detrimental effects on learning and examination performance in children and on impairment of the ability of adults to work and drive.[8] The newer second-generation H_1 antihistamines are safer, cause less sedation and are more efficacious.[9,10]

As a medline search did not yield any positive results, the present study was designed to evaluate the prescribing trends of both H_1 antihistamines and H_2 blockers among patients with dermatological disorders.

MATERIALS AND METHODS

A prospective study was carried out in the Department of Dermatology of Vinayaka Missions Medical College and Hospital, Karaikal. A total of 291 prescriptions of in-patients of Dermatology Department were scrutinized during the study period of 1-year from February 2014 to January 2015.

Basic demographic data such as patient's age, sex, and pattern of skin diseases reported and trends in prescribing of antihistamines were noted. Incomplete prescriptions or non-respondent patients were excluded from the study. A written informed consent was obtained from all the patients. The study protocol confirmed to the ethical guidelines of the 1975 Declaration of Helsinki, and Ethical Clearance was obtained from the Institutional Ethical Committee before commencing the study.

All the prescriptions were analyzed for both the first- and second-generation H_1 antihistaminics as well as H_2 antihistaminic drugs and also whether antihistamines were prescribed as monotherapy or as combinations. The most common adverse effects of the prescribed antihistamines were noted and also graded. All the data of our observational study were expressed as absolute numbers and percentages.

RESULTS

A total of 291 prescriptions were analyzed during the study period out of which 213 (73.2%) contained at least one antihistaminic drug. Among these 213, 125 were of male patients and 84 were of female patients (Table 1). The majority of patients were in the age group of 31-40 years (31.9%) followed by 41-50 years (19.2%) (Figure 1).

Overall, cetirizine (59.2%) was the most commonly prescribed H_1 antihistamine drug as monotherapy, and pheniramine + cetirizine (16.4%) was the most commonly prescribed antihistaminic combination (Table 2).

The H_1 antihistamines, which were most commonly prescribed as monotherapy, were cetirizine 126 (81.3%) followed by pheniramine 14 (9.0%) and levocetirizine 8 (5.2%). Hydroxyzine (4.5%) was the least prescribed antihistamine as monotherapy (Figure 2).

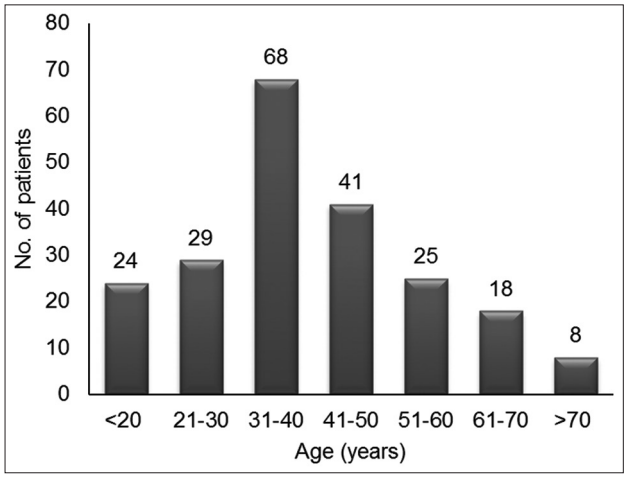

Figure 1: Age distribution among in-patients who were prescribed antihistamines

Table 1: Demographic profile of antihistamine prescribed patients

Sex	Number (%)
Male	125 (60.6)
Female	84 (39.4)
Total	213 (100)

Table 2: Prescription of H_1 antihistamines among in-patients of dermatology department

Dermatological disorder	Total number of H_1 antihistamines	C	P	L	H	C+P	C+H	L+H
Psoriasis	66	35	5	2	2	12	9	1
Eczema	25	15	1	-	-	9	-	-
Allergic contact dermatitis	14	7	-	2	-	1	4	-
Airborne contact dermatitis	11	7	-	-	-	2	1	1
Bullous disorders	13	6	2	-	3		1	
Generalized pruritus	13	7	1	-	1	4		
Urticaria	13	10	1	-	1	1		
Tinea cruris/corporis	8	5	1			2		
Seborrheic dermatitis	8	5	-			1	2	
Lymphedema and vasculitic ulcers	7	4	-	1			2	
Scabies	6	6	-					
Lichen planus	5	2	-			3		
Mycetoma	4	4	-					
Cellulitis	3	2	-	1				
Herpes zoster	3	-	-	2			1	
Senile xerosis	3	2	-				1	
Hansen's disease	2	1	1					
Vitiligo	2	1	1					
Alopecia areata	2	2	-					
Fixed drug eruption	2	1	1					
Vaginal candidiasis	2	2	-					
SLE	1	1	-					
Insect bite allergy	1	1	-					
Total	213	126	14	8	7	35	21	2

C: Cetirizine; P: Pheniramine; L: Levocetirizine; H: Hydroxyzine

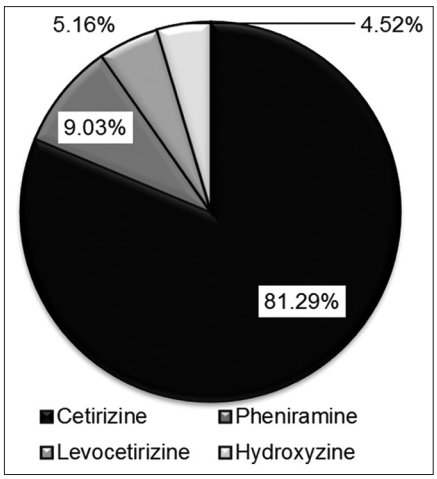

Figure 2: H_1 antihistamines used as monotherapy in dermatological disorders

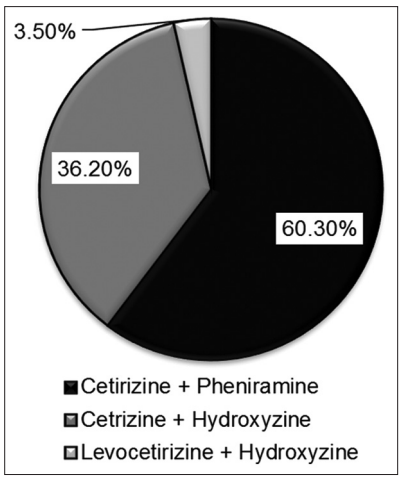

Figure 3: H_1 antihistamines used as combination therapy in dermatological disorders

The most commonly used H_1 antihistamines as combination therapy were cetirizine + pheniramine (60.3%) followed by cetirizine + hydroxyzine (36.2%). Levocetirizine + hydroxyzine combination was the least prescribed (3.5%) in H_1 antihistamine combinations (Figure 3).

With regard to the type of antihistamines prescribed in our study, second-generation H_1 antihistamines were more commonly prescribed (62.9%) compared to first-generation antihistamines (9.9%). The remaining prescriptions contained a combination of the first- and second-generation drugs (27.2%) (Figure 4).

The top three disorders, for which antihistamines were prescribed, were psoriasis followed by eczema and allergic contact dermatitis (Table 2). In psoriasis, cetirizine (53.0%) was the most commonly prescribed antihistamine followed by combination of cetirizine + pheniramine (18.2%), cetirizine + hydroxyzine (13.6%), levocetirizine (3.0%), and hydroxyzine (3.0%). The combination of levocetirizine + hydroxyzine was the least prescribed antihistamine in psoriasis (1.5%) (Figure 5). With regard to eczema, cetirizine was again the most commonly prescribed antihistamine (60.0%) followed by cetirizine + pheniramine (36.0%) and pheniramine alone (4.0%) (Figure 6). In relation to allergic contact dermatitis, again cetirizine was the most commonly prescribed (50.0%) followed by the combination of cetirizine + hydroxyzine (28.6%) followed by levocetirizine (14.3%). The combination of cetirizine + pheniramine (7.1%) was the least prescribed (Figure 7).

It was observed in our study that for all the dermatological disorders, antihistamines as monotherapy were the predominantly prescribed drugs except for lichen planus where combination therapy was predominant (Table 2). It was also observed that cetirizine was the most prescribed antihistamine for all the disorders except herpes zoster where levocetirizine was prescribed more than cetirizine (Table 2).

H_2 antihistamines, more commonly referred to as H_2 blockers mostly used for treating peptic ulcer, were also prescribed for dermatological disorders in a total of 91 patients, mostly in the resistant cases. The most common dermatological conditions for which H_2 blockers were prescribed were eczema (15.4%) followed by urticaria (14.3%) and psoriasis (12.1%) (Table 3). Even though many H_2 blockers are available in the market, in our study ranitidine was the one and only H_2 blocker that was used for treating resistant dermatological disorders.

Table 4 shows the grading of the adverse effect profile of prescribed antihistamines in our study. From the Table 4, it is clear that hydroxyzine is having the highest sedation, whereas levocetirizine has the least sedation, pheniramine has got the highest anticholinergic side effects, and cetirizine/levocetirizine has very minimal or no anticholinergic side effects.

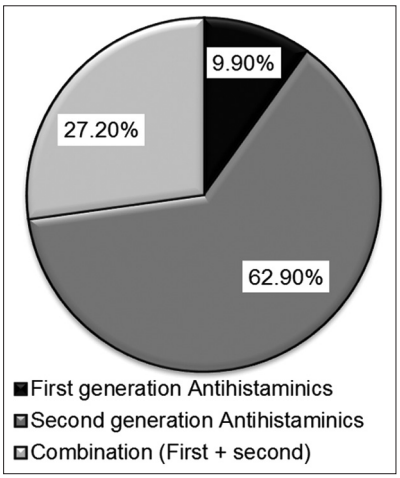

Figure 4: Prescription of first- and second-generation H_1 antihistamines and their combinations

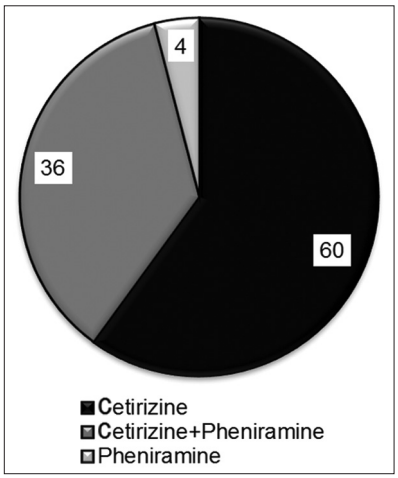

Figure 6: Pattern of H_1 antihistamine use among patients with eczema

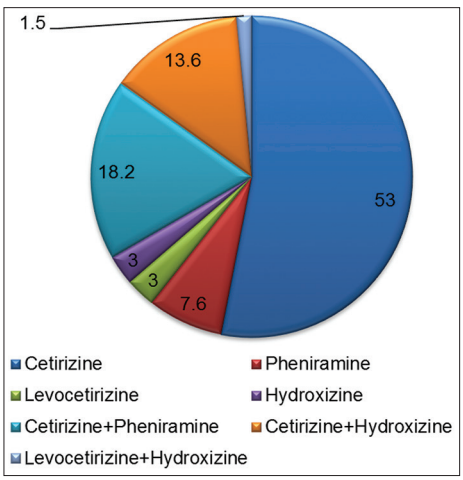

Figure 5: Pattern of H_1 antihistamine use among patients with psoriasis

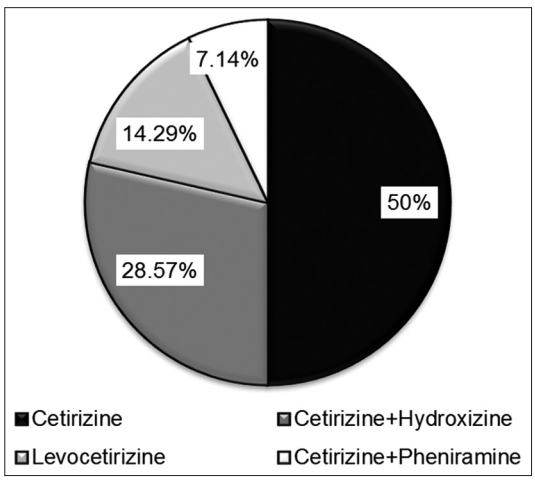

Figure 7: Pattern of H_1 antihistamine use among patients with allergic contact dermatitis

DISCUSSION

Antihistamines are valuable in treating skin disorders mediated by histamine. One of the important indications for their use is pruritus which though considered benign can adversely affect a patient's well-being and can be incapacitating when severe.[11]

To our knowledge, there was no study done on prescribing trends of both H_1 and H_2 antihistamines in dermatological disorders. This was the first systematic study done which analyzed not only the trends of usage of H_1 antihistamines but also has analyzed the prescription of H_2 blockers in dermatological disorders. In our study, the most common skin disorders for which antihistamines were prescribed were psoriasis followed by eczema and allergic contact dermatitis. This is in contrast to other previous studies[12-16] which reported that skin infections, allergic skin disorders, and acne vulgaris were the most common dermatological diseases, which can be explained by the fact that in previous studies, it was the overall picture of skin disorders presented to dermatology, and in our study, the results are about the skin disorders in which an antihistamine was prescribed. The pattern of skin diseases varies from one country to another country and in various regions within the same country.[17] It is more so in India where climate, socio-economic status, religions, and customs are widely varied in different parts of the country.

Table 3: Use of H_2 blockers in dermatological disorders

Name of the dermatological disorder	Number of H_2 blockers prescribed
Eczema	14
Urticaria	13
Psoriasis	11
Allergic contact dermatitis	10
Vesiculobullous disorders	10
Hansen's disease	5
Lichen planus	5
Seborrheic keratosis	4
Herpes zoster	3
Alopecia areata	3
Systemic lupus erythematosus	2
Tinea cruris and corporis	2
Vulvovaginal candidiasis	1
Cellulitis	2
Mycetoma	2
Vitiligo	1
Seborrheic dermatitis	1
Malignant melanoma	1
Neurofibroma	1
Total	91

In our study, most commonly affected age group was 31-40 years followed by 41-50 years. Male subjects were predominantly affected in our study. This is in agreement with some previous studies[18,19] but was in contrast to the other studies done by Das and Chatterjee[15] and Bhuvana et al.,[20] where female patients predominated.

In our study, second-generation antihistamines were prescribed more frequently compared to first-generation drugs (Figure 4). There are various reasons for preferring the second-generation antihistamines over their first-generation counterparts. Second-generation antihistamines, being more lipophobic or hydrophilic, offer the advantages of a lack of central nervous system and anticholinergic side effects such as sedation and dry mouth, which are commonly seen in first-generation antihistamines.[21-24] Their longer duration of action also enables a more patient-friendly dosing regimen which increases patient compliance.[10]

Second-generation H_1 antihistamines are also more effective than their first-generation counterparts as they also act through different mechanisms as well.[25,26] Except in the case of severe pruritus where drugs such as hydroxyzine which belong to first-generation compounds are preferred, in all other conditions, it is better to choose from second-generation H_1 antihistamines.[27]

In our study, 27.2% of the antihistamines that were prescribed were combinations.

Most commonly prescribed antihistaminic combination was cetirizine + pheniramine (60.3%) followed by cetirizine + hydroxyzine (36.2%). This is in contrast to the results observed in other study done by Kumar and Beenta,[28] where chlorpheniramine with diphenhydramine and chlorpheniramine with cetirizine were the commonly prescribed antihistaminic combinations.

Combining of first- and second-generation antihistamines might provide a new and effective option in the treatment of dermatological conditions especially when severe.[29] Sedative antihistamines, such as hydroxyzine, may be particularly valuable with pruritus during the night while second-generation non-sedating antihistamines, such as loratadine,

Table 4: Grading of the major adverse effects of prescribed H_1 antihistamines

Grading	Sedation	Grading	Anticholinergic effect
High	Hydroxyzine	High	Pheniramine
Moderate	Pheniramine	Low	Hydroxyzine
Low	Cetirizine	Minimal/ absent	Cetirizine/ levocetirizine
Minimal/ absent	Levocetirizine	-	-

desloratadine, and levocetirizine, may be suitable in the daytime for relief of pruritus.[30]

Even though some latest drugs such as desloratadine, rupatadine, azelastine, and mizolastine[31,32] are present in the market, which are proven to have better efficacy compared to drugs such as cetirizine, these drugs were not prescribed at all. This might be because of the non-affordability of patients due to their poor economic status in this region as most of them are from rural background.

A substantial number of patients (42.7%) in our study were prescribed H_2 antihistamines which indicate that many cases were resistant to the treatment as H_2 blockers are only prescribed when the disease is a resistant one. It has been proved that addition of H_2 blockers to H_1 antihistamines will improve outcomes in allergic conditions which include skin too.[33,34]

Our study had some limitations such as drug compliance of the patients; the response to drugs and percentage of drugs used from essential drug list were not determined. The strengths of the study are the use of a structured pro forma for data collection, a relatively higher sample size, and analysis of H_2 antihistamines in dermatological disorders, which were never done in any previous studies of this kind.

CONCLUSION

In our study, psoriasis was the most common skin disorder reported for which an antihistaminic drug was prescribed. Overall, second-generation antihistamines were more commonly prescribed than the first-generation drugs. The most commonly prescribed antihistamine was cetirizine and the most commonly prescribed antihistamine combination was that of cetirizine and pheniramine maleate. Ranitidine was the only H_2 blocker prescribed, and it was given to the resistant cases only.

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How to cite this article: Kolasani BP, Divyashanthi CM, Sasidharan P, Kothandapany SV. Prescription analysis of both H_1 and H_2 antihistamines among in-patients of dermatology department of a tertiary care teaching hospital in a coastal town of South India. Natl J Physiol Pharm Pharmacol 2016;6(6):537-543.

Source of Support: Nil, **Conflict of Interest:** None declared.