

Prescribing Pattern of Anti-Histamines on Acute Inflammation In Tertiary Care Hospital

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Abstract

Acute inflammation is a prevalent condition that is treated with the use of antihistamines because of their anti-inflammatory and anti-allergic effect. Although frequently used, there are scarce data on tertiary-care settings, regarding use patterns, in India.

Aims: To analyze pattern of prescribing anti histamine drugs in patients with acute inflammatory conditions and to review some basic demography, co morbid and treatment options.

Study design: A prospective observation study was carried out for 6 months in a tertiary care hospital in Salem, Tamilnadu. Based on predetermined inclusion/exclusion criteria 200 patients were selected. Data were obtained from IPD and OPD. Data was analysed by using descriptive statistics.

Results: Of these 200 patients 59% were males, 41% were females, and most of them were in the age group 50 to 69 years (53%). The most common situations were fever and common cold (36% and (23%). The most common co-morbidities were diabetes mellitus (19%), and hypertension (18%). The most common antihistamine was chlorpheniramine maleate (38%) followed by levocetirizine (23%). The most popular dosage form was tablet (88%). People preferred monotherapy (76% of them), rather than combination therapy (24%). Mostly first generation antihistamines were prescribed (56%) followed by second generation (29%) and third generation (15%).

Conclusion: In the present study, it was observed that more antihistamines were used during the acute inflammatory period and chlorpheniramine maleate was the most used antihistamine in males.

The ease of administration and good compliance was the reason for preferring monotherapy as well as oral tablet formulations. The use of first generation antihistamines was more common than second and third.

Keywords: Acute inflammation, Antihistamines, Prescribing pattern, Chlorpheniramine maleate, Tertiary care hospital

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Introduction

Inflammation is an immunological response that is your body's protective immune response that reacts to foreign substances in the body(1). By recruiting immune cells, it can attach or destroy foreign substances or injured tissue in our body(3), thereby protecting our body from the harmful external or internal injury(2), infection or irritants. The body's immediate short term immune response to injury and infection is known as acute inflammation. But when the inflammatory responses become excessive in the presence of minimal infection, it plays a major role in the onset of other diseases such as diabetes mellitus, arthritis, cancer and others (4-7). Histamine, a type of biogenic amine, is responsible for inflammation, allergies, and the production of stomach acids and is one of the chief mediators of the allergic

response (8). It is typically stored in mast cells and basophils, and is released extracellularly when a triggering signal is detected(9). An allergic reaction occurs when histamine binds to histamine receptors H1, H2, H3 and H4 (10). Of these receptors, the H1 receptor is the one most frequently targeted by drugs for treating allergies and increased capillary permeability (11). H2 receptors stimulate the release of the stomach's acid and vasodilation. H3 receptors in modulation of neurotransmitter release and H4 receptors in chemotaxis and inflammation in immune cells (12). Loratadine is an H1 histamine receptor antagonist but it is mainly used for allergy medication. Accurately, it is within the second generation of non-sedating anti-histamine drugs (13). They have other anti-inflammatory properties that are

independent of H1 receptor antagonism that involve down regulation of NF-kB and AP-1(14). By controlling maturation and activation of leukocytes and directing them to the site of inflammation, mast cell histamine will promote the development of allergic type inflammatory diseases (15,16). Mast cells have an important role in many allergic diseases, including allergic asthma, allergic rhinitis and pulmonary fibrosis (17). Cetirizine is an H1-antihistamine that treats diseases that occur as a result of mast cell activation (18). H2R-selective antihistamines of the types cimetidine and ranitidine lower the secretion of gastric acid (19). Antihistamines are routinely prescribed for the treatment of the symptoms of many allergic reactions such as an allergic rhinitis, urticaria, hay fever, etc. Additionally, they are often used to treat nausea and vomiting associated with morning sickness as well as prevent motion sickness. They are well proven for efficacy, tolerance and safety in humans. Though antihistamines are frequently used as therapeutics in clinics, few studies have been carried out to systematically analyze the use of anti-histamines in general medicine in India (20). With their relative safety and very good control of the most common nasal symptoms, second generation anti-histamines are accepted as the effective alternative for the treatment of all kinds of allergic reactions (21). The inflammatory mediators such as histamine, leukotriene and prostaglandins will affect tissues that are rich in smooth muscle cells, vascular endothelial cells and nerve endings, like respiratory tract and skin (22–24). In comparison to the previous generation antihistamine drugs, the drugs like Cetirizine are second-generation H1-antihistamine drugs and are given at a low dose in the treatment of histamine-mediated allergic conditions due to their high selectivity to H1 receptor and less sedative effect than first-generation antihistamines is a preferable manner. The mix of drugs (cetirizine, loratadine) is for people who suffer from severe allergic rhinitis or chronic urticaria. These are second generation antihistamines which affect histamine H1 receptors and have different pharmacokinetics. When combined, they can prolong the length of symptom relief (25,26).

It is imperative to learn the types, prescription habits and treatment responses to inflammation, because improperly managed inflammation. This present study aims to

analyse the profile, associated comorbidities and pattern of drug use amongst the patients admitted to a tertiary care hospital (TC) in Salem, Tamil Nadu and the objective of the study is to understand the current practice and give inputs for better management in future.

Methodology

The study design was a prospective observational study which was conducted in General Department of a tertiary care hospital at Salem, from January 2025 to June 2025. The study is approved by Institutional Ethics Committee (IEC) [ID no VMKVMC&H /IEC/25/238]. The sample size was calculated by Slovin's formula (n) as 92(27,28). Because of this, the number of samples used in this study was rounded to ~200. The random sampling method was used in enrolling 200 patients.

Patients with acute inflammation in Outpatient department under 18 years of age of both genders were included in this study and those with one or more associated comorbid medical conditions were also included in the study, but patients who had chronic inflammatory diseases, under immunosuppressive therapy, incomplete medical records, under alternative medical systems like Ayurveda, Unani or Homoeopathy and pregnant patients were excluded.

Data Collection

SPSS (version 28.0) was used for the statistical analysis. For results analysis and presentation the descriptive statistics were used. Categorical variables were expressed in terms of frequency and percentage, the continuous variables were described using mean and standard deviation. Pearson chi square test was used to determine the association between baseline variables (age, gender, years of experience, and educational background). The level of significance was set at $p \leq 0.05$, highly significant at $p \leq 0.01$ and at very highly significance at $p \leq 0.001$. These were then tabulated for interpretation.

Results

A descriptive survey study was carried out in a tertiary care hospital in Salem, Tamilnadu among 200 patients for studying the pattern of Acute inflammation, utilisation of anti-histamine drug and comorbidities in acute inflammation affected people.

TABLE 1. Distribution of cases based on Gender and Age

Variables	Subgroups	No of patients	% of Patients
Gender	Male	119	59%
	Female	81	41%
Age[yrs]	18-29Y	13	6%
	50-69Y	106	53%
	30-49Y	44	22%
	70-89Y	37	19%

Among 200 patients, 119 (59%) were male, and 81 (41%) were female, indicating a higher proportion of male participants. The majority of patients were in the 50–69 years age group (106, 53%), followed by 30–49 years (44, 22%) and 70–89 years (37, 19%), while only 13 patients (6%) belonged to the 18–29 years age group. The results are shown in Table 1.

TABLE 2. Distribution of cases based on comorbidity conditions

Variable	Subgroups	No of patients	% of Patients
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Co-Morbidity	Lung Disease	10	5%
	HTN	35	18%
	Nil	60	30%
	DM	39	19%
	Kidney Disease	6	3%
	PE	8	4%
	Depression	8	4%
	UTI	2	1%
	Hepatitis	8	4%
	Asthma	12	6%
	TB	2	1%
	CAD	4	2%
	Arthritis	2	1%
	Hyperthyroidism	2	1%
	RA	2	1%

Among the 200 patients, the assessment of comorbidities revealed that a substantial proportion had no comorbidities, with 60 patients (30%) having none. Among the reported disease conditions, diabetes mellitus was the most prevalent comorbidity, affecting 39 patients (19%), followed by hypertension in 35 patients (18%). The lowest prevalence was observed for urinary tract infection, tuberculosis, arthritis, hyperthyroidism, and rheumatoid arthritis, each affecting 2 patients (1%). The results are shown in Table 2.

TABLE 3. Distribution of Cases Based on Diagnosis in The Study Population

Variable	Subgroups	No of patients	% of Patients
Diagnosis	Pneumonia	8	4%
	Fever	72	36%
	Viral Fever	17	8%
	Common Cold	46	23%
	Giddiness ↓ Evaluation	23	12%
	Hay Fever	9	4%
	CKD	2	1%
	Bee Sting	11	6%
	COPD	6	3%
	Acute Exacerbation of COPD	2	1%
	Bronchial Asthma	4	2%

Among the 200 patients, fever was identified as the most common clinical condition for which antihistamines were prescribed, accounting for 72 patients (36%). This was followed by a common cold in 46 patients (23%) and giddiness requiring evaluation in 23 patients (12%). The least affected conditions in the study population were chronic kidney disease and acute exacerbation of COPD, each reported in only 2 patients. The results were shown in Table 3.

TABLE 4. Number of Drugs Distributed in The Study Population

Variable	Subgroups	No. Of Times Prescribed	% of Anti-Histamine
Anti-Histamine	Chlorpheniramine Maleate	97	38%
	Bilastine	6	2%
	Levocetirizine	59	23%
	Cetirizine	16	6%
	Fexofenadine	7	3%
	Betahistine	15	6%
	Diphenhydramine Hydrochloride	6	2%
	Chlorpheniramine Maleate (Ascoril D)	28	11%
	Cinnarizine	15	6%

Among 200 patients most commonly prescribed drugs was CPM 38% of prescription, i.e., 97 (38%) followed by second most common drug prescribed was Levocetirizine 59 (23%) of prescription, and then followed by CPM (SYP) 28 (11%) and Cetirizine 16 (6%) and Betahistine 15 (6%) and Cinnarizine 15 (6%) and Fexofenadine 7 (3%) and Bilastine 6 (2%)

and Diphenhydramine Hydrochloride 6 (2%). This drug is most commonly prescribed in anti-histamines are shown in Table 4.

TABLE 5. Number of Dosage Forms and Types of Therapy Distributed in The Study Population

Variable	Subgroups	No. of Patients	% of Patients
Dosage Forms	TAB	176	88%
	SYP	33	16%
	IV	24	12%
Types of Therapy	Combination drug therapy	48	24%
	Monotherapy	152	76%
Generation	First	112	56%
	Second	59	29%
	Thrid	29	15%

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