ORIGINAL RESEARCH

A comparison of olopatadine hydrochloride and rupatadine fumarate in seasonal allergic rhinitis

[1]Dr. Dinesh Kumar Patel, [2]Dr. Smriti Chaturvedi, [3]Dr. Preeti Sahu, [4]Dr. Ayush Chauhan

[1]Consultant ENT-HNS Surgeon, Bhagyodaya Hospital, Sagar, Madhya Pradesh, India
[2]Assistant Professor, Department of Pathology, Bundelkhand Medical College, Sagar, Madhya Pradesh, India
[3]Assistant Professor, Department of Anaesthesiology, Bundelkhand Medical College, Sagar, Madhya Pradesh, India
[4]Consultant Orthopaedic Surgeon, Chatrapati Shivaji Hospital, Sagar, Madhya Pradesh, India

Corresponding Author
Dr. Ayush Chauhan
Consultant Orthopaedic Surgeon, Chatrapati Shivaji Hospital, Sagar, Madhya Pradesh, India
Email: drayushchauhan@gmail.com

Received date: 15 February, 2024 Acceptance date: 18 March, 2024

ABSTRACT

Background: An IgE-mediated inflammation of the membranes lining the nose causes allergic rhinitis, a symptomatic condition of the nose that develops following exposure to allergens. The present study was conducted to compare olopatadine hydrochloride and rupatadine fumarate in seasonal allergic rhinitis. **Materials & Methods:** 80 patients of allergic rhinitis were divided into 2 groups of 40 each. Group I patients received olopatadine 10 mg once daily orally for two weeks and group II patients received rupatadine 10 mg once daily orally for two weeks. Assessment of serum Immunoglobulin E (IgE) level, total nasal symptom score (TNSS) and Rhinoconjunctivitis quality of life questionnaire (RQLQ) scoring was done. **Results:** Group I had 22 males and 18 females and group II had 17 males and 23 females. The mean duration of suffering was 15.2months in group I and 13.7 in group II. Total leucocyte count was 9484.2 in group I and 8642.4 in group II. DC Neutrophil 63.6% in group I and 64.3% in group II. DC Eosinophil was 7.6% in group I and 7.5% in group II. Absolute eosinophil count was 701.2cells per microlitre in group I and 698.3cells per microlitre in group II and IgElevel was 342.1IU/ml in group I and 325.9IU/ml in group II. The mean total nasal symptom score (TNSS) was 16.8 in group I and 14.3 in group II. The mean rhinoconjunctivitisquality of life questionnaire (RQLQ) was 3.8 in group I and 3.2 in group II. The difference was significant (P< 0.05). **Conclusion:** Because of its superior efficacy and safety profile, lopatadine is a preferable option for treating seasonal allergic rhinitis when compared to rupatadine.

Key words: allergic rhinitis, olopatadine hydrochloride, lopatadine

INTRODUCTION

An IgE-mediated inflammation of the membranes lining the nose causes allergic rhinitis, a symptomatic condition of the nose that develops following exposure to allergens. The four main symptoms of this symptomatic disease are anterior or posterior rhinorrhoea, sneezing, nasal itching, and nasal congestion, according to the clinical definition.[1] The symptoms of allergic rhinorrhea include disturbed sleep, exhaustion, depression, and compromised cognitive function, all of which lower productivity and quality of life.[2] Together with these conditions, children may also have dental malocclusions and facial deformities, conjunctivitis, postnasal drip, Eustachian tube dysfunction, otitis media, and sinusitis.[3] The following are common outdoor allergens: molds and pollens; occupational triggers: latex; tobacco smoke; automotive exhaust: ozone, oxides of nitrogen, and sulphur dioxide; household allergens: mites, domestic animals, insects, or plants.[4]

Dual blockers are two new generation H1-receptor antagonists, olopatadine and rupatadine. Olopatadine hydrochloride is a selective antagonist of the histamine H1 receptor that inhibits PAF as well as the production of inflammatory lipid mediators from human polymorphonuclear leucocytes and eosinophils, including leukotriene and thromboxane.[5] In double-blind clinical trials, olopatadine proved to be very helpful in treating allergic rhinitis, chronic urticaria, and conjunctivitis.[6] Treatment with olopatadine is said to significantly reduce nasal blockage compared to other medications in the same

class. It has also been demonstrated that rupatadine fumarate, a long-acting, selective, non-sedating oral histamine H1-receptor antagonist, exhibits PAF antagonist action. It can be used to treat chronic idiopathic urticaria (CIU), PAR, and SAR.[7]The present study was conducted to compare Olopatadine hydrochloride and rupatadine fumaratein seasonal allergic rhinitis.

MATERIALS & METHODS

The present study comprised of 80 patients of allergic rhinitis of both genders. All patients were informed regarding the study and written consent was obtained. Demographic data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 40 each. Group I patients received olopatadine 10 mg once daily orally for two weeks and group II patients received rupatadine 10 mg once daily orally for two weeks. Clinical improvement was assessed in terms of change in total and differential count of leucocytes, serum Immunoglobulin E (IgE) level, total nasal symptom score (TNSS) and Rhinoconjunctivitisquality of life questionnaire (RQLQ) scoring. Results of the study were assessed statistically. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Drug	olopatadine 10 mg	rupatadine 10 mg
M:F	22:18	17:23

Table I shows that group I had 22 males and 18 females and group II had 17 males and 23 females.

Table II Comparison of parameters

Parameters	Group I	Group II	P value
Duration of suffering (months)	15.2	13.7	0.91
Total leucocyte count	9484.2	8642.4	0.48
DC Neutrophil (%)	63.6	64.3	0.91
DC Eosinophil (%	7.6	7.5	0.94
Absolute eosinophil count (cells per microlitre)	701.2	698.3	0.73
IgE (IU/ml)	342.1	325.9	0.09

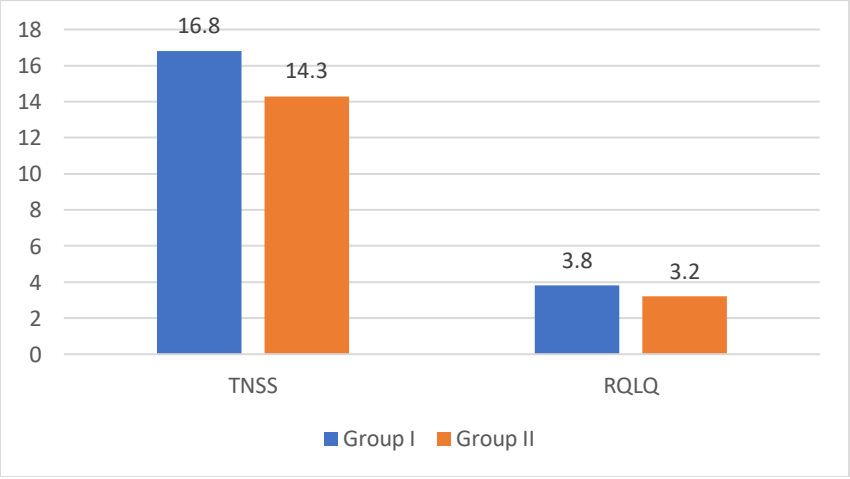
Table II shows that mean duration of suffering was 15.2monthsin group I and 13.7 in group II. Total leucocyte count was 9484.2in group I and 8642.4in group II. DC Neutrophil 63.6% in group I and 64.3% in group II. DC Eosinophil was 7.6% in group I and 7.5% in group II. Absolute eosinophil count was 701.2 cells per microlitrein group I and 698.3cells per microlitre in group II and IgE level was 342.1IU/mlin group I and 325.9IU/ml in group II.

Table III Comparison of TNSS and RQLQscore in both groups

Parameters	Group I	Group II	P value
TNSS	16.8	14.3	0.18
RQLQ	3.8	3.2	0.27

Table III shows that mean total nasal symptom score (TNSS) was 16.8 in group I and 14.3 in group II. The mean rhinoconjunctivitisquality of life questionnaire(RQLQ) was 3.8 in group I and 3.2 in group II. The difference was significant (P< 0.05).

Graph I Comparison of TNSS and RQLQ score in both groups



DISCUSSION

Allergic rhinitis is defined as symptoms of sneezing, nasal pruritus, airflow obstruction, and mostly clear nasal discharge caused by IgE-mediated reactions against inhaled allergens and involving mucosal inflammation driven by type 2 helper T (Th2) cells.[8]The WHO estimates that 400 million people worldwide suffer from allergic rhinitis, with a frequency of 10% to 32% among adults in the Asia Pacific area.[9] In India, there are very few community-based studies that assess the burden and risk factors of allergic rhinitis, despite the high prevalence. The majority of asthmatics also have rhinitis.[10] Asthma risk is greatly increased by seasonal or perennial allergic rhinitis; up to 40% of individuals with allergic rhinitis have or will develop asthma.5. Allergy rhinitis is often preceded by atopic eczema.[11] Most people who have allergic rhinitis also typically have allergic conjunctivitis. The variables influencing the specific atopic disease that a person may acquire as well as the causes of why some people just have rhinitis while others have both.[12,13]The present study was conducted to compare Olopatadine hydrochloride and rupatadine fumarate in seasonal allergic rhinitis.

We found that group I has 22 males and 18 females and group II had 17 males and 23 females. Maiti et al[14]compared the efficacy and safety of olopatadine and rupatadine in seasonal allergic rhinitis (SAR). 70 patients were recruited and were randomized to two treatment groups and received the respective drugs for 2 weeks. Both the drugs significantly reduced the differential count (P<0.001) and absolute eosinophil count (P<0.001), but olopatadine was found to be superior. In olopatadinegroup, there was significantly higher reduction in serum IgE (P=0.01), TNSS (P<0.001) and RQLQ score(P=0.015) than that of rupatadine. Incidence of adverse effects was found to be less in olopatadine groupwhen compared with rupatadine group.

We observed that the mean duration of suffering was 15.2months in group I and 13.7 in group II. Total leucocyte count was 9484.2 in group I and 8642.4 in group II. DC Neutrophil 63.6% in group I and 64.3% in group II. DC Eosinophil was 7.6% in group I and 7.5% in group II. Absolute eosinophil count was 701.2 cells per microlitre in group I and 698.3cells per microlitre in group II and IgElevel was 342.1IU/ml in group I and 325.9IU/ml in group II.

We found that mean total nasal symptom score (TNSS) was 16.8 in group I and 14.3 in group II. The mean rhinoconjunctivitisquality of life questionnaire (RQLQ) was 3.8 in group I and 3.2 in group II. Martínez-Cócera et al[15] in their study 249 patients were randomised to receive rupatadine 10 mg once daily (127 patients) or cetirizine 10 mg (122 patients) for two weeks.The mTDSS was 0.7 for both treatment groups (intention to treat analysis). In the investigator's global evaluation of efficacy at the seventh day, 93.3% and 83.7% patients in the rupatadine and cetirizine groups, respectively, showed some or great improvement (p = 0.022). In the per protocol analysis (n = 181), runny nose at the seventh day of treatment was absent or mild in 81.1% of patients in the rupatadine group and in 68.6% of patients in the cetirizine group (p = 0.029). In any case statistical significance was not maintained at the second week. Overall, all treatments were well tolerated. Adverse events (AEs) were similar in both treatment groups, i.e. headache, somnolence and fatigue/asthenia as the most often reported. Somnolence was reported in 9.6% and 8.5% of patients treated with rupatadine or cetirizine, respectively. The most reported AEs (67%) were mild in intensity. Our results suggest that rupatadine 10 mg may be a valuable and safe alternative for the symptomatic treatment of SAR.

CONCLUSION

Authors found that because of its superior efficacy and safety profile, lopatadine is a preferable option for treating seasonal allergic rhinitis when compared to rupatadine.

REFERENCES

1. Cruz AA, Popov T, Pawankar R, et al. Common characteristics of upper and lower airways in rhinitis and asthma: ARIA update, in collaboration with GA(2)LEN. Allergy. 2007; 62(Suppl 84): 1–41.
2. Guerra S, Sherrill DL, Martinez FD, Barbee RA. Rhinitis as an independent risk factor for adultonset asthma. J Allergy Clin Immunol. 2002; 109:419–25.
3. Shaaban R, Zureik M, Soussan D, et al. Rhinitis and onset of asthma: a longitudinal populationbased study. Lancet. 2008; 372:1049–57.
4. Hopper JL, Bui QM, Erbas B, et al. Does eczema in infancy cause hay fever, asthma, or both in childhood? Insights from a novel regression model of sibling data. J Allergy Clin Immunol. 2012; 130:1117–22.
5. Bielory L. Allergic conjunctivitis and the impact of allergic rhinitis. Curr Allergy Asthma Rep. 2010; 10:122–34.
6. Arbes SJ Jr, Gergen PJ, Elliott L, Zeldin DC. Prevalences of positive skin test responses to 10 common allergens in the US population: results from the third National Health and Nutrition Examination Survey. J Allergy Clin Immunol. 2005; 116:377–83.
7. Meltzer EO, Blaiss MS, Derebery MJ, et al. Burden of allergic rhinitis: results from the Pediatric Allergies in America survey. J Allergy Clin Immunol. 2009; 124(Suppl):43–70.
8. Mainasara MG, Labaran AS, Kirfi AM,FuforeMB,Fasunla AJ, Sambo GU. Clinical Profile and management of chronic rhinosinusitis among adults in North-Western Nigeria. The American Journal of Innovative Research and Applied Sciences 2012; 1: 133 – 136.
9. Ashok MV. Meghna P. Allergic Rhinitis and its effect on Middle Ear Pressure. National Journal of Otorhinolaryngology and Head & Neck Surgery 2013; 2: 1-5.
10. Bazzazi H, Gharagozlou M, Kassaie M, Parsikia A, Zahmatkesh H. The prevalance of asthma and allergic disorders among school children in Gorgan. JRMS 2007; 12(1): 28-33.

11. Newacheck PW, Stoddard JJ. Prevalence and impact of multiple childhood chronic illnesses. J Pediatr 1994;124: 40–48.
12. Annesi-Maesano I, Dider I, Klossek M, Chanel L, Morean D, Bousquet J. The Score for Allergic Rhinitis (SFAR): A Simple and Valid Assessment Method in Population Studies. Allergy 2002; 57(2): 107-14.
13. Chawes BL, Kreiner-Møller E, Bisgaard H. Objective assessments of allergic and nonallergic rhinitis in young children. Allergy. 2009 Oct;64(10):1547-53.
14. Maiti R, Jaida J, Rahman J, Gaddam R, Palani A. Olopatadine hydrochloride and rupatadine fumarate in seasonal allergic rhinitis: A comparative study of efficacy and safety. J PharmacolPharmacother2011;2:270-6.
15. Martínez-Cócera C, De Molina M, Marti-Guadano E, Pola J, Conde J, Borja J, Pérez I, Arnaiz E, Izquierdo I. Rupatadine 10 mg and cetirizine 10 mg in seasonal allergic rhinitis: a randomised, double-blind parallel study. J InvestigAllergol Clin Immunol. 2005 Jan 1;15(1):22-9.