The Effect of Combined Medical Treatment on Quality of Life in Persistent Allergic Rhinitis

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Received: 4 October 2011 / Accepted: 19 January 2012 / Published online: 2 February 2012
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Abstract Allergic rhinitis may significantly affect the patients' quality of life. The aim of this study was to compare the effects of nasal steroids alone, to nasal steroids plus Levocetirizine or Montelukast, on quality of life in persistent allergic rhinitis. This is a prospective, randomized study and included 56 patients with moderate to severe persistent allergic rhinitis. All patients had house dust mite allergy on skin prick test and we divided the patients into three groups. 1 month long medical treatment was; topical Mometasone furoate 200 mcg/day in the first group (n:14), Mometasone furoate 200 mcg/day plus oral Levocetirizine 5 mg/day in the second group (n:21), and Mometasone furoate 200 mcg/day plus oral Montelukast 10 mg/day in the third group (n:21). We evaluated the patients before treatment and at the first month after treatment with mini rhinoconjunctivitis quality of life questionnaire (miniRQLQ) and nasal symptom scores. In the first group nasal symptom and mini RQLQ scores were not improved but in second and third group, both scores were improved significantly ($p < 0.05$). Nasal obstruction symptom score was better in the third group after treatment ($p < 0.01$), but other nasal symptom scores (rhinorrhea, sneezing and nasal itching) were better in the second group (For each symptom $p < 0.05$). Improvement of

quality of life scores in the second group were better than the third group ($p < 0.05$). In persistent allergic rhinitis, combination of levocetirizine or montelukast to nasal steroids was better than the topical mometasone furoate alone in terms of quality of life.

Keywords Allergic rhinitis · Medical treatment · Quality of life · Nasal steroid · Levocetirizine · Montelukast

Introduction

Allergic rhinitis is a chronic and common disease with an estimated prevalence of 20% [1]. It is a major health problem due to its impact on quality of life, work/school performance, productivity, and economy [2].

Allergic rhinitis is an IgE mediated inflammation of nasal mucosa and major symptoms are rhinorrhea, sneezing, nasal obstruction and itching. In the medical treatment of allergic rhinitis the severity and duration of the disease should be considered and a stepwise approach should be applied [2]. Antihistaminics improve rhinorrhea, sneezing, itching and eye symptoms, but they are relatively less effective for nasal obstruction [1, 2]. Nasal steroids can reduce nasal congestion and they are recommended as the first-line treatment in allergic rhinitis patients with moderate to severe and persistent symptoms. Leukotriene receptor antagonists are relatively new in the treatment of allergic rhinitis. The leukotriene receptor antagonists are specifically effective in treating asthma plus allergic rhinitis by inhibiting the leukotriene pathway of allergic inflammatory cascade [3].

The aim of this study was to compare the effects of nasal steroids alone, to nasal steroids when combined with either

This study was presented at 30th European Academy of Allergy and Clinical Immunology Congress in İstanbul, Turkey 2011 as a poster presentation.

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Levocetirizine or Montelukast, in terms of quality of life in persistent allergic rhinitis.

Materials and Methods

This is a prospective, randomized study and included 56 patients with moderate to severe persistent allergic rhinitis. There were 36 female and 20 male patients with an age range of 17–67 years (mean 42 years). The patients with other nasal disorders like marked septal deviation, nasal polyposis, nasopharyngeal mass, asthma, COPD or cardiovascular disorders were excluded. All of the patients had positive skin tests with multitest-II applicator for house dust mite allergy.

Study Design

We divided the patients into three groups. First group (n:14) was given topical Mometasone furoate 200 mcg/day, second group (n:21) was given Mometasone furoate 200 mcg/day plus oral Levocetirizine 5 mg/day and third group (n:21) was given Mometasone furoate 200 mcg/day and oral Montelukast 10 mg/day for 1 month. We evaluated the patients before treatment and at the end of the treatment with mini rhinoconjunctivitis quality of life questionnaire (miniRQLQ) and nasal symptom scores.

Nasal Symptoms Scoring

Nasal symptoms evaluated in this study were rhinorrhea, sneezing, nasal obstruction, and nasal itching. Each symptom was evaluated individually and the total symptom score was calculated as the sum of four nasal symptoms. Symptom were scored as follows: 0 = no symptom; 1 = mild (symptom present but not troublesome); 2 = moderate (symptom is frequently troublesome but does not interfere daily activity or sleep); 3 = severe (symptoms that interfered with daily activity and sleep).

Mini Rhinoconjunctivitis Quality of Life Questionnaire

The mini RQLQ includes 14 questions covering five domains: activity limitations, practical problems, nasal symptoms, eye symptoms, and other symptoms. Each item was rated on a 7-point scale from 0 (no impairment) to 6 (severely impaired). High score corresponded to low quality of life.

Statistically Analysis

Data were analysed using the SPSS (Statistical Package for Social Sciences) 13.0 for Windows and Sigmastat 3.1. χ^2

test was used to compare the age and gender distributions of the patients. The initial symptoms of cases were compared using Mann–Whitney *U* test. The variation in total symptom scores and RQLQ scores during the treatment period were compared by Wilcoxon signed rank test. Results were expressed as mean $\pm$ SD and a *p* value <0.05 was considered statistically significant.

Results

There was no statistically significant difference between groups in terms of age and gender.

Nasal Symptom Scores

In the first group, improvement of each nasal symptom score and total nasal symptom scores (TNSS) were not statistically significant at the first month after treatment ($p > 0.05$) but in second and third group, both parameters were significantly better ($p < 0.05$). Improvement of nasal obstruction symptom score was the highest in the third group ($p < 0.01$), but the most significant improvements of other nasal symptom scores (rhinorrhea, sneezing, and nasal itching) and TNSS were observed in the second group (For each symptom $p < 0.05$) (Fig. 1).

Mini Rhinoconjunctivitis Quality of Life Questionnaire

In the first group, improvement of mini RQLQ scores was not statistically significant ($p > 0.05$) but in second and third groups the scores were statistically significant ($p < 0.05$). Improvement of quality of life scores in the second group was better than the third group ($p < 0.05$) (Fig. 2).

Discussion

In the Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines; antihistaminics are suggested as the first-line therapy for mild intermittent or persistent allergic rhinitis [2]. Oral H1-antihistaminics are effective in improving the symptoms mediated by histamine discharge such as rhinorrhea, sneezing, nasal itching and eye symptoms; but are less effective on nasal congestion [5]. Intranasal glucocorticosteroids are the most effective medications available for the symptomatic treatment of allergic and nonallergic rhinitis [4, 6]. Antihistaminics and intranasal corticosteroids are also effective in improving all symptoms of allergic rhinitis as well as ocular symptoms [7, 8]. When nasal congestion is present and is the dominating symptom; an intranasal glucocorticosteroid is suggested as the most

Fig. 1 Nasal symptom scores and TNSS pretreatment and after treatment

appropriate first-line treatment [9, 10]. Intranasal glucocorticosteroids are very well tolerated with low incidence of adverse effects and is comparable to placebo [11–15]. There may be differences in the safety of different molecules and those with lower bioavailability are better tolerated [16, 17].

In our study, improvement of nasal symptom scores were not statistically significant in the first group who used nasal corticosteroid alone. Also, improvement of RQLQ scores were not statistically significant in the same group. In the second group, using nasal corticosteroid with antihistaminic resulted in improvement of both nasal symptom scores and RQLQ scores. In many studies, it has been reported that leukotriene receptor antagonists are more effective than placebo, equivalent to oral H1-antihistaminics and inferior to intranasal glucocorticosteroids in the treatment of seasonal allergic rhinitis [18–21]. In one study of perennial rhinitis, montelukast was found to be superior to placebo [22], but in another study its effects were not superior to placebo and were similar to cetirizine after 1 month of treatment [23]. It has also been reported that the

combination of oral H1-antihistaminics and leukotriene receptor antagonists does not increase the efficacy of any single drug and is less effective than intranasal corticosteroids [24–26]. In our study, montelukast plus mometasone furoate was found to be most effective in the improvement of nasal obstruction.

Rhinorrhea and nasal congestion are the most important local symptoms of moderate to severe persistent allergic rhinitis. Ameliorating these symptoms is important for adequate nasal breathing, controlling recurrent sinusitis and for improved daily physical and mental activities. Therefore, it is more than treating nasal symptoms but significantly improving the patient's quality of life. Combining local and systemic medications can be better than using them alone. As we have observed in our study, adding oral antihistaminics or leukotriene receptor antagonists to nasal steroids presents further benefits.

As a conclusion we consider that in the management of moderate to severe persistent allergic rhinitis patients, adding levocetirizine or montelukast to mometasone furoate is more effective than mometasone furoate alone.

Fig. 2 MiniRQLQ scores pretreatment and after treatment

References

- Lundback B (1998) Epidemiology of rhinitis and asthma. *Clin Exp Allergy* 28(Suppl 2):3–10
- Bousquet J et al (2008) Allergic rhinitis and its impact on asthma (ARIA) 2008 update. *Allergy* 63(8):8–160
- Pulleritis T, Praks L, Skoogh BE, Ani R, Lotvall J (1999) Randomized placebo-controlled study comparing a leukotriene receptor antagonist and a nasal glucocorticoid in seasonal allergic rhinitis. *Am J Respir Crit Care Med* 159:1814–1818
- Weiner JM, Abramson MJ, Puy RM (1998) Intranasal corticosteroids versus oral H1 receptor antagonists in allergic rhinitis: systematic review of randomised controlled trials. *BMJ* 317:1624–1629
- Simons FE (2004) Advances in H1-antihistamines. *N Engl J Med* 351:2203–2217
- Yanez A, Rodrigo GJ (2002) Intranasal corticosteroids versus topical H1 receptor antagonists for the treatment of allergic rhinitis: a systematic review with meta-analysis. *Ann Allergy Asthma Immunol* 89:479–484
- Schenkel E (2003) Features of mometasone furoate nasal spray and its utility in the management of allergic rhinitis. *Expert Opin Pharmacother* 4:1579–1591
- Bernstein DI, Levy AL, Hampel FC, Baidoo CA, Cook CK, Philpot EE et al (2004) Treatment with intranasal fluticasone propionate significantly improves ocular symptoms in patients with seasonal allergic rhinitis. *Clin Exp Allergy* 34:952–957
- Berger WE, Nayak AS, Staudinger HW (2005) Mometasone furoate improves congestion in patients with moderate to severe seasonal allergic rhinitis. *Ann Pharmacother* 39:1984–1989
- Bhatia S, Baroody FM, de Tineo M, Naclerio RM (2005) Increased nasal airflow with budesonide compared with desloratadine during the allergy season. *Arch Otolaryngol Head Neck Surg* 131:223–228
- Rosenblut A, Bardin PG, Muller B, Faris MA, Wu WW, Caldwell MF et al (2007) Long-term safety of fluticasone furoate nasal spray in adults and adolescents with perennial allergic rhinitis. *Allergy* 62:1071–1077
- Brannan MD, Herron JM, Reidenberg P, Affrime MB (1995) Lack of hypothalamic-pituitary-adrenal axis suppression with once-daily or twice-daily beclomethasone dipropionate aqueous nasal spray administered to patients with allergic rhinitis. *Clin Ther* 17:637–647
- Wilson AM, Sims EJ, McFarlane LC, Lipworth BJ (1998) Effects of intranasal corticosteroids on adrenal, bone, and blood markers of systemic activity in allergic rhinitis. *J Allergy Clin Immunol* 102:598–604
- Kim KT, Rabinovitch N, Uryniak T, Simpson B, O'Dowd L, Casty F (2004) Effect of budesonide aqueous nasal spray on hypothalamic-pituitary-adrenal axis function in children with allergic rhinitis. *Ann Allergy Asthma Immunol* 93:61–67
- Fokkens WJ, Jogi R, Reinartz S, Sidorenko I, Sitkauskienė B, van Oene C et al (2007) Once daily fluticasone furoate nasal spray is effective in seasonal allergic rhinitis caused by grass pollen. *Allergy* 62:1078–1084
- Scadding GK (2004) Intranasal steroid sprays in the treatment of rhinitis: is one better than another? *J Laryngol Otol* 118:395–396 author reply 6
- Blais MS, Benninger MS, Fromer L, Gross G, Mabry R, Mahr T et al (2006) Expanding choices in intranasal steroid therapy: summary of a roundtable meeting. *Allergy Asthma Proc* 27:254–264
- Wilson AM, O'Byrne PM, Parameswaran K (2004) Leukotriene receptor antagonists for allergic rhinitis: a systematic review and meta-analysis. *Am J Med* 116:338–344

19. Rodrigo GJ, Yanez A (2006) The role of antileukotriene therapy in seasonal allergic rhinitis: a systematic review of randomized trials. *Ann Allergy Asthma Immunol* 96:779–786
20. Nathan RA, Yancey SW, Yancey SW, Waitkus-Edwards K, Prillaman BA, Stauer JL, Philpot E (2005) Fluticasone propionate nasal spray is superior to montelukast for allergic rhinitis while neither affects overall asthma control. *Chest* 128:1910–1920
21. Martin BG, Andrews CP, van Bavel JH, Hampel FC, Klein KC, Prillaman BA et al (2006) Comparison of fluticasone propionate aqueous nasal spray and oral montelukast for the treatment of seasonal allergic rhinitis symptoms. *Ann Allergy Asthma Immunol* 96:851–857
22. Patel P, Philip G, Yang W, Call R, Horak F, LaForce C et al (2005) Randomized, double-blind, placebo-controlled study of montelukast for treating perennial allergic rhinitis. *Ann Allergy Asthma Immunol* 95:551–557
23. Philip G, Williams-Herman D, Patel P, Weinstein SF, Alon A, Gilles L et al (2007) Efficacy of montelukast for treating perennial allergic rhinitis. *Allergy Asthma Proc* 28:296–304
24. Di Lorenzo G, Pacor ML, Pellitteri ME, Morici G, Di Gregoli A, Lo Bianco C (2004) Randomized placebo-controlled trial comparing fluticasone aqueous nasal spray in monotherapy, fluticasone plus cetirizine, fluticasone plus montelukast and cetirizine plus montelukast for seasonal allergic rhinitis. *Clin Exp Allergy* 34:259–267
25. Saengpanich S, de Tineo M, Naclerio RM, Baroody FM (2003) Fluticasone nasal spray and the combination of loratadine and montelukast in seasonal allergic rhinitis. *Arch Otolaryngol Head Neck Surg* 129:557–562
26. Pullerits T, Praks L, Ristioja V, Lotvall J (2002) Comparison of a nasal glucocorticoid, antileukotriene, and a combination of antileukotriene and antihistamine in the treatment of seasonal allergic rhinitis. *J Allergy Clin Immunol* 109:949–955