CASE REPORT
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Short-term Beneficial Effect of Aspirin in Patient with Chronic Rhinosinusitis and Tolerant to Acetylsalicylic Acid

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ABSTRACT

It is well known that desensitization treatment with aspirin can significantly improve symptoms and quality of life in patient with aspirin-exacerbated respiratory disease. However, its mechanism has not been clearly understood yet. In this case report, 41-year-old male patient was referred to our allergy and immunology department with complaints of chronic rhinosinusitis including postnasal discharge, sneezing, facial pain/pressure, waking up tired, nasal obstruction, smell loss for a long time. According to the patient, the complaints were controlled partially with nasal steroid and antihistamines, and single dose parenteral depot steroids were highly effective in controlling the symptoms and each time this effect lasted at least three weeks.

The patient was told to use aspirin when needed analgesic and he started to use aspirin 500 mg bid. po for 10 days for his pain in the joints. The patient stressed the superiority of aspirin over other drugs including oral antihistamine and LTA and its equality to systemic steroid drugs in suppressing symptoms. It seemed that aspirin had positive effects in allergic inflammation at least in some subset of aspirin tolerant patients with chronic sinusitis.

Keywords: Acetylsalicylic acid; Allergy; Aspirin; Chronic rhinosinusitis; Corticosteroids; Nasal polyps

INTRODUCTION

It is well known that desensitization treatment with aspirin can significantly improve symptoms and quality of life in patient with aspirin-exacerbated respiratory disease (AERD). It also decreases nasal polyp formation and sinus infections, reducing the need for oral corticosteroids and sinus surgery in these patients.[1,2] However, its mechanism has not been clearly understood yet. The treatment is expected to be beneficial especially in suboptimally controlled patients with optimal pharmacotherapy or in patients requiring multiple operations due to re-growth of nasal polyps or intractable sinus disease.[3]

As far as we know, in English literature, there is only one case report presenting an aspirin tolerant patient with nasal polyps and chronic rhinosinusitis who benefited from aspirin treatment.[4] In this case report, we also present an aspirin tolerant patient with chronic

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rhinosinusitis who did not benefit from conventional rhinosinusitis treatment but, in short follow up period, dramatically benefited from aspirin treatment.

CASE REPORT

41-year-old male patient was referred to our allergy and immunology department with complaints of chronic rhinosinusitis including postnasal discharge, sneezing, facial pain/pressure, waking up tired, nasal obstruction, smell loss for a long time. Because of these complaints, patient used nasal steroids, leukotriene antagonists (LTA) and oral antihistamines with short and irregular periods for several times. Single dose parenteral (IM) depot steroids (Methylprednisolone acetate 40 mg/ml, Depo-medrol, Eczacibasi®, Luleburgaz, Turkey) were added to treatment in peak periods of his complaints for four times. According to the patient, the complaints were controlled partially with nasal steroid and antihistamines, and single dose parenteral depot steroids were highly effective in controlling the symptoms and each time this effect lasted at least three weeks. Paranasal sinus CT revealed soft tissue density in the paranasal sinuses and polypoid soft tissue density in the left half of the nasal cavity. Endoscopic sinus surgery and polypectomy were performed for the patient two times with 2-year intervals. Pathologic examination revealed dense eosinophilic infiltration (in some places in the form of crypt abscess) in material from polypectomy (Figure 1).

Bilateral avascular necrosis of femoral head was developed in patient approximately four years ago and decompression surgery of the femoral head in both sides and hyperbaric oxygen therapy were performed. Antihistamines and LTA drugs were not effective in controlling the symptoms in patient who cannot use neither local nor systemic steroids because of avascular necrosis of femoral head. Allergic skin test was performed for the patient using a large panel of inhaler allergens (Allergopharma-Germany) and the results were negative. There were no respiratory complaints, exertional dyspnea or bronchial hyperreactivity anamnesis in patients history. Pulmonary function tests and chest X-ray were normal. Patient's history revealed no drug allergy and when needed, he could take paracetamol without any problem. In his querying for aspirin-exacerbated respiratory disease, the patient stated no aspirin intake for a long time. Considering the possibility of aspirin intolerance, oral provocation test with aspirin was performed by giving acetyl salicylic acid with 3-hours intervals in increasing dose, such as 25 mg, 50 mg and 100 mg in the first day and 200 mg, 300 mg, 500 mg in the second day (acetyl salicylic acid, Aspirin, Bayer®, Istanbul, Turkey). No allergic reaction was seen. Thus, the patient was told to use aspirin when needed analgesic and he started to use aspirin 500 mg bid. po for 10 days for his pain in the joints.

In the third day of aspirin intake, patient reported the regaining of his sense of smell prominently. Additionally, nasal obstruction and postnasal discharge disappeared, nasal breathing improved and quality of life significantly increased. When comparing the drugs, the patient stressed the superiority of aspirin over other drugs including oral antihistamine and LTA and its equality to systemic steroid drugs in suppressing symptoms. However the patient had to quit aspirin because of gastric symptoms such as heartburn and stomachache. Shortly after quitting aspirin treatment, rhinosinusitis symptoms reoccurred. Despite his gastric complaints, patient began to use short period of aspirin treatment (500 mg bid. p.o) in intense period of rhinosinusitis symptoms, and symptoms were significantly taken under control with this treatment. After a period without treatment, enteric coated 300 mg aspirin treatment (aspirin 300 mg bid. p.o) proposed to the patient because of gastric symptoms. Visual analog scale (VAS) was used to compare the severity of the patient's symptoms before the treatment and 10 days after the treatment (Table 1). In this scoring system, patient was asked for marking the VAS according to severity of 7 symptoms shown in Table 1 (0: no symptoms, 10: very severe symptoms).

Table 1. Rhinosinusitis VAS scores of the patient before and after the treatments.

VAS score	Symptoms						
	Runny nose	Postnasal discharge	Sneezing	Facial pain/pressure	Wake up tired	Nasal obstruction or stuffiness	Smell loss
Before aspirin treatment	6	8	6	8	6	5	6
After aspirin treatment	0	2	0	0	2	0	0

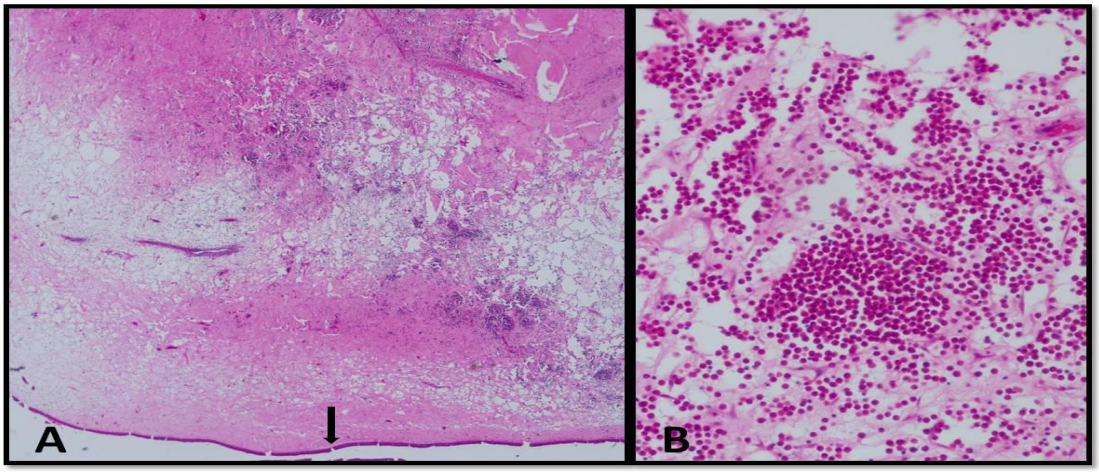

Figure 1. Histopathologic view of nasal polyp. A. The polyp is covered by pseudostratifying epithelium and has an edematous stroma (arrow) (HE, x40). B. There is eosinophilic infiltration in most part of the polyp stroma (HE, x200)

DISCUSSION

It is considered that the pathogenesis of AERD is strongly related with the cyclooxygenase pathway aberrations, though it has not been delineated.[5] Meanwhile, it is reported that most of AERD patients synthesize excessive leukotrienes. The baseline production of leukotrienes has been found to be related with respiratory disease severity.[6] Cyclooxygenase-1 inhibitors, such as aspirin, may cause overproduction of inflammatory mediators by diverting arachidonic acid to the lipoxygenase pathway.[7] Juergens et al. demonstrated that, after aspirin desensitization, LTB4 decreases in peripheral blood monocytes from patients with AERD.[8] Moreover, in other studies, a downregulation of the cysteinyl LT receptor 1 (cysLT1) on nasal submucosal cells and inhibition of T-cell IL-4 production was observed after aspirin desensitization.[9] Dense eosinophilic infiltration in nasal polyp of our patient, which is usually seen in AERD patients, shows common pathogenetic mechanisms. All these aforementioned effects lead to the reduction of allergic inflammation. The safety and clinical effectiveness of aspirin desensitization in the treatment of AERD has been supported by many reports.[10] Desensitization causes reduction in nasal congestion and polyp formation, and it also improves respiratory symptoms. The need for surgery and ongoing medication is reduced by this treatment, as well. Improvement in congestion and sense of smell within 24-48 hours was noted by many patients. Our aspirin-tolerant patient having chronic sinusitis and nasal polyps benefited from 10 days aspirin treatment. The first and most prominent sign showing the effectiveness of treatment was regaining sense of smell, such as seen in AERD patients.

Lee and Stevenson suggested that several patients who had previously positive aspirin challenges and later cut their therapy were rechallenged while taking montelukast and did not have an overt reaction.[10] When these patients continued taking aspirin, clinical flattening the nasal turbinates and improvement of their nasal and asthma scores were observed at one month after daily treatment with aspirin 650 mg twice daily. This phenomen was explained as a silent desensitization due to blocking influence of montelukast by authors. Our patient did not have at story of nonsteroid anti-inflammatory drug sensitivity and also had not used leukotriene antagonist for a long time before aspirin challenge test.

It is reported that nonallergic rhinitis with eosinophilic syndrome may be an early phase of the triad of nasal polyposis, intrinsic asthma and intolerance to aspirin.[11] The age of onset of the disease and its clinical course is not consistent with the Sampter's triad. After the provocation test with aspirin and in the following period, patient intermittently had aspirin (usually 500 mg) and no allergic reaction was observed in one year follow-up period.

In conclusion, it seemed that aspirin had positive effects in allergic inflammation at least in some subset of aspirin tolerant patients expressing phenotypic features of chronic sinusitis, and nasal polyps. It is suggested that a well-designed, randomized-controlled studies

should be carried out for more enlightening this issue.

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