Dear Doctor,

Greetings from Micro Labs. We are happy to bring you "Allergy Connections" which contains latest and interesting news in the field of Allergy.

This issue contains:

1. **Evaluation of uncontrolled chronic rhinosinusitis with nasal polyps after surgery in condition of eosinophilia, asthma, NERD and use of oral corticosteroids**
2. **Assessment of aeroallergen sensitization in allergic rhinitis patients unresponsive to medical therapies**
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Looking forward to your valuable feedback
Best Regards,
Medical Team, Micro Labs Ltd

Evaluation of uncontrolled chronic rhinosinusitis with nasal polyps after surgery in condition of eosinophilia, asthma, NERD and use of oral corticosteroids

Introduction

The best predictor model was the sum model of baseline Eos + asthma/NERD + OCS

Chronic rhinosinusitis (CRS) have a complex aetiology that includes immune and epithelial barrier components. The microbiome, environment, and genetic factors have a role in the development of CRS, which lead to inflammation of the sinonasal mucosa.[1] The definition of uncontrolled CRS was based on symptoms (obstruction, rhinorrhea/postnasal drip, facial pain/pressure, smell, sleep/fatigue), endoscopic findings of diseased mucosa, and need for rescue treatment, according to the European Position Paper on Rhinosinusitis and Nasal Polyps 2020 (EPOS2020). The main subtypes of CRS include, CRS with nasal polyps (CRSwNP) and without (CRSsNP), have different pathomechanisms, aetiologies, and inflammatory types. To reduce morbidity and costs associated with severe uncontrolled CRSwNP, early identification and prevention is important.[2] This study aimed to evaluate associations of baseline factors with uncontrolled CRSwNP after endoscopic sinus surgery (ESS).

Methods

This was a retrospective study conducted on CRSwNP patients after surgery. A total of 137 CRSwNP patients undergoing ESS were included. The following indicators of uncontrolled CRSwNP were evaluated: (1) the duration until the revision ESS (if any); (2) the number of doctor-prescribed antibiotic courses purchased each year; (3) the number of doctor-prescribed oral corticosteroid (OCS) courses purchased each year, defined as 0 or ≥1, and/or continuous OCS due to exacerbation of CRSwNP and/or asthma. Nasal polyp (NP) eosinophilia, peripheral blood eosinophilia, co-existing asthma and/or non-steroidal anti-inflammatory drug-exacerbated respiratory disease (NERD), need for OCS within the previous year, previous ESS, endoscopic NP score, and Lund-Mackay score of sinus computed tomography scans were selected as baseline factors based on EPOS2020.

Results

Out of 137 patients, 51 (37.2%) had patient recorded history of AR, 59 (43.1%) had asthma, 17 (12.4%) had NERD, and 25 (18.2%) were current smokers. Revision ESS was performed in 35 patients (25.5%). Out of them, 27 (77.1%) had one revision surgery, and eight (22.9%) had two during the follow-up. Revision ESS was positively correlated with baseline NP eosinophilia ≥30%, young age, and a positive history of prior OCS. The best predictor model for all the three outcomes was the sum model of baseline Eos+ asthma/NERD + OCS (1 point for each risk factor, AUC > 0.75, $p < 0.01$) was the best predictor model for all three outcomes. Eos was defined as nasal polyp (NP) eosinophilia ≥ 30% and/or blood eosinophilia ≥ 250 cells/µl; Asthma/NERD as asthma and/or NERD; and OCS as a history of ≥ 1 course(s) of OCS within the previous year. The period until revision ESS was predicted using the sum model

baseline Eos + Asthma/NERD + OCS (1 point of each; total range 0-3 points; values 0-1, 2-3). During the follow-up, a high value (2 to 3 points) was significantly correlated with revision ESS (Figure 1). The number of purchased OCS was significantly higher in high value group of baseline Eos + Asthma/NERD + OCS than low value group. Compared to the low value group, the patient group with a high value (1-2 points) of baseline Eos + Asthma/NERD + OCS purchased a significantly more number of antibiotic courses.

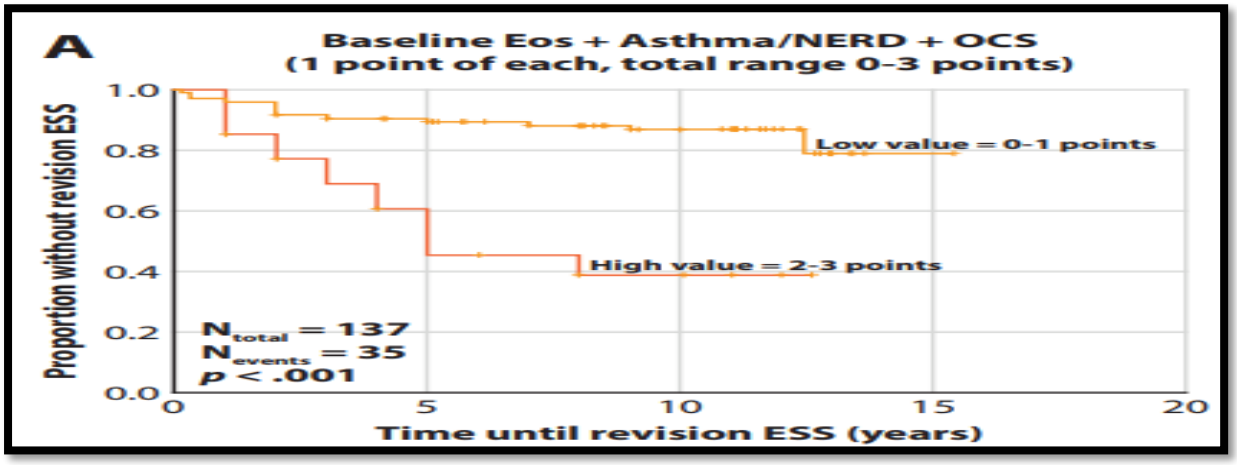

Figure 1. Representation of sum model of baseline Eos + Asthma/NERD + OCS to the time until revision ESS

Discussion

This study found sum model of "eos + Asthma/NERD + OCS" had a strong predictive ability for uncontrolled CRSwNP, as measured by revision-ESS, purchased OCS and antibiotic courses during the follow-up. It was found that asthma/NERD had the best predictive potential of uncontrolled CRSwNP after surgery, as measured by revision ESS and purchased OCS/antibiotics.[2] This results were similar with the previous study showing that asthma and NERD were common comorbidities of CRS and that the upper and lower airway diseases exacerbate each other.[3] Baseline eosinophilia had the second-best predictive potential among individual indicators for uncontrolled CRSwNP following surgery.[2] It has been demonstrated that eosinophilic histology was a significant risk factor for revision ESS.[4] In the follow-up, young age was linked to revised ESS and purchased OCS. The results of this investigation demonstrated that the sum model of eos + Asthma/NERD + OCS had a better predictive potential than the individual predictors.

Conclusion

For uncontrolled CRSwNP, the sum model of eosinophilia, asthma/NERD, and OCS had good predictive potential. The EPOS2020 requirements were met by these predictions.

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Assessment of aeroallergen sensitization in allergic rhinitis patients unresponsive to medical therapies

Introduction

Allergic rhinitis (AR) is caused by immunoglobulin E (IgE)-mediated reactions to inhaled allergens and is characterized by sneezing, nasal congestion, nasal itching and rhinorrhoea (nasal discharge).[1] In recent years, 20% of the population worldwide have experienced one kind of atopic diseases. In the past decade, there has been a significant correlation between climate change and a number of risk factors for allergic respiratory disorders, such as indoor pollutants, aeroallergens, and environmental exposure to air pollutants and bio-particulates. The main objective of therapy for allergic rhinitis is symptom relief.[2] This study aimed to identify the relevant aeroallergen sensitization and effectively manage the refractory signs and symptoms of allergic rhinitis in patients who were not responding to pharmacological therapy.

Methods

A total of 62 patients with refractory allergic rhinitis were included in this study. Allergic rhinitis was defined based on the presence of sensitization to environmental allergens and according to ARIA (Allergic rhinitis and its impact on asthma) guidelines. Following enrolment, information on the patients socio-demographic data, concomitant allergic diseases, comorbidities, and clinical history of the rhinitis were collected.

Results

In this study, 62.9% of the patients were female. The mean age of all patients was 33.9 years. The most prevalent aeroallergens were weeds (69.4%) and trees (64.5%) in these patients. Among individuals with allergic rhinitis who did not respond to standard medical treatments, outdoor allergens were more common than indoor allergens.

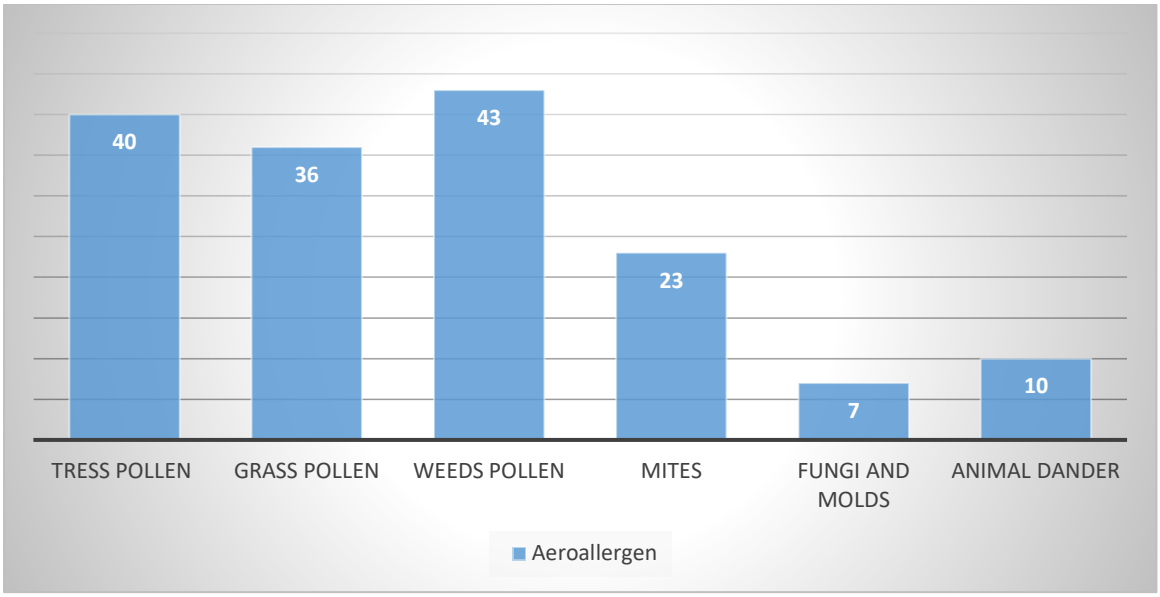

Figure 1. Results of Skin prick test in patients with allergic rhinitis

Discussion

As one of the most common allergies in the world, allergic rhinitis can usually be treated with medicine but patient response to therapy varies. This study results showed outdoor aeroallergens were more common than indoor ones. Furthermore, among the population in study, weeds and mites were the most prevalent indoor and outdoor aeroallergens, respectively. Weeds (69.4%) and trees (64.5%) were the most frequent aeroallergens in these individuals, respectively.[2] A recent study stated that in recent decades weed pollen allergy has increased and it was the prevalent cause of pollinosis worldwide.[3]

Conclusion

Outdoor allergens more commonly weeds were the common cause for severe refractory allergic rhinitis than indoor allergens. Therefore, for significant improvement and positive outcome individualized treatment should be provided in accordance to their allergen sensitization.

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Evaluation of relationship between serum immunoglobulin E level and eosinophil Count among Patients with Allergic Rhinitis

Introduction

Serum IgE level can be useful in diagnostic assessment of patients with and at risk of allergic rhinitis

Allergic rhinitis (AR) is caused by type 1 hypersensitivity reaction that the nasal mucosa undergoes in reaction to aeroallergens, such as animal dander, house dust mites, and grass and tree pollens, causes allergic rhinitis. The primary signs and symptoms are paroxysmal sneezing, pruritus, watery rhinorrhea, and nasal congestion.[1] Allergic rhinitis affects up to 40% of the population and its prevalence is increasing. Serum IgE plays an important role in the pathophysiology of allergy. It has been found that eosinophils are involved in allergies. According to reports, one of the characteristics of allergic diseases was the infiltration of the tissues with a higher concentration of eosinophils. This study aimed to evaluate serum IgE level and its relationship with eosinophils count among patients with AR.

Methods

This was a cross-sectional study comprising of individuals diagnosed with AR. 61 patients were included in this study. Five millilitres of blood were examined using a pack five hematologic auto-analyzer to determine the eosinophil count and an immunoglobulin E ELISA kit to estimate immunoglobulin E.

Results

All patients had mean ages of 38.65 ± 14.34 years, serum IgE levels of 371.24 ± 82.63 IU/ml, and eosinophil counts of 3.35 ± 2.87%, respectively. 11.47% of patients had elevated eosinophil counts, 88.53% had normal eosinophil counts. Of the subjects, 11 (18.0%) had mild AR. Their mean ± SD for IgE and eosinophil was 367.60 ± 97.46 and 2.62 ± 1.99, respectively. 22 (36.1%) had moderate AR, with mean ± SD IgE and eosinophil values of 365.06 ± 93.01 and 3.05 ± 2.77, while 28 (45.9%) had severe AR, with mean ± SD IgE and eosinophil values of 377.51 ± 69.63 and 3.87 ± 3.20. It was found that there was no significant correlation between the serum IgE level and eosinophil counts (Figure 1).

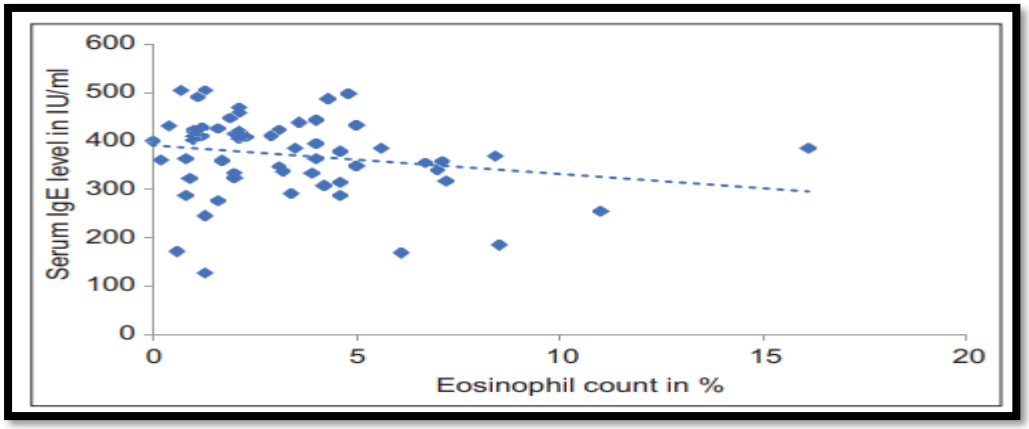

Figure 1. Graph illustrating the relationship between serum IgE level in IU/ml and eosinophil count in %

Discussion

Results of this study showed that serum IgE level was raised in all (100%) of the participants. This results were correlated with the results of Choudhari et al. where serum IgE was found raised in 100% of patients with AR.[3] This indicated a strong correlation between elevated blood IgE levels and AR and can be an important investigation in this disorder. Raised serum IgE level were found in all forms of AR. Only 11.5% of the participants in the study had higher eosinophil counts while, the remaining 88.5% had normal counts. According to Mirza et al. eosinophil count may be elevated in acute AR, however it might not be a useful diagnostic test for AR patients.[4] The study found a negative, insignificant correlation between the eosinophil count and the serum IgE level. This study confirmed the significance of serum IgE level as a marker of AR, and as such, clinical practice will benefit from the estimation of this level for the purpose of diagnosing patients who have or are at risk for AR.

Conclusion

High serum IgE level were found in all the participants. It was found that there was no significant association between serum IgE and eosinophil count.

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Case report on Hypocomplementemic Urticarial Vasculitis Syndrome

Introduction

Presence of angioedema, oral ulcers, low complement level, leukocytic vasculitis, and persistent eosinophilia led to the diagnosis of HUVS.

Hypocomplementemic urticarial vasculitis syndrome (HUVS) often referred to as McDuffie Syndrome, is a rare small vessel vasculitis characterized by chronic urticaria, hypocomplementemia, and anti-C1q antibodies. This rare disease was associated with multi-organ systemic involvement including angioedema, laryngeal edema, cutaneous lesions, pulmonary manifestations, arthritis, arthralgia, glomerulonephritis, and uveitis.[1] Diagnosis was based on two major criteria (chronic recurrent urticaria for more than 6 months and hypocomplementemia) and at least two minor criteria (leukocytoclastic vasculitis on skin biopsy, arthralgias and arthritis, glomerulonephritis, uveitis or episcleritis, abdominal pain, and positive C1q antibody test). This report described a case of patient with the known history of rheumatoid arthritis, who presented with complaints of abdominal pain and oral ulcers and on evaluation led to the diagnosis of HUVS.

Case Presentation

A 44 years old male patient presented with the complaints of abdominal pain and chronic recurrent urticarial skin rash for 9 months. Past medical history included venous thromboembolism and seropositive rheumatoid arthritis, for which apixaban was used as an anticoagulant. Upon physical examination, patient showed oral mucosal ulcerations and diffuse purpuric and urticarial lesions on multiple locations in the body. Computed tomography revealed extensive mural thickness throughout the ileum, ascending colon, hepatic flexure, and duodenum suggestive of intestinal angioedema. Eosinophilia was identified during the laboratory investigation and increased erythrocyte sedimentation rate and C-reactive protein were the initial signs of inflammation. inflammatory/rheumatological evaluation showed negative anti-double stranded and anti-smith antibodies, low complement levels C3 and C4, and negative c-ANCA, p-ANCA, human immunodeficiency virus, and cryoglobulin. Bone marrow biopsy was unremarkable for parasitic infections. Later biopsy of skin rash showed positive for leukocytoclastic vasculitis. Rheumatology and hematology investigations highly suspected HUVS because of the presence of leukocytoclastic vasculitis, inflammatory rheumatoid arthritis, hypocomplementemia, oral ulcers, chronic eosinophilia, and angioedema. Ultimately, a positive result from the anti-C1q antibody confirmed the diagnosis of HUVS. Patient was started with methyl prednisone 60 mg daily, famotidine and cetirizine. Along with steroids dapsone was added with folic acid. During discharge patient was prescribed with hydroxychloroquine. Upon follow up for 2 months, rash was resolved.

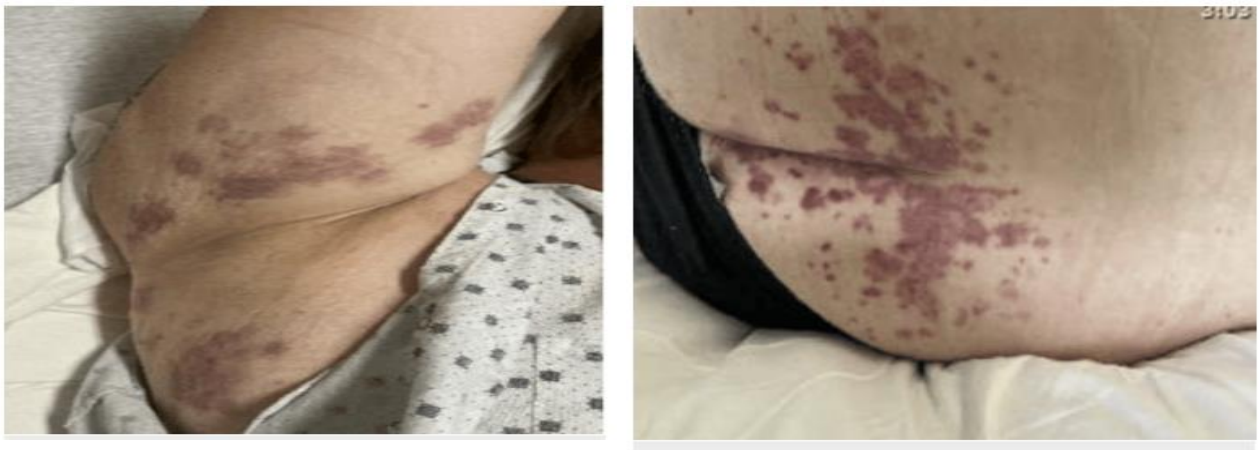

Figure 1. Presence of purpuric rash in axillary and buttocks area

Discussion

HUVS is characterized by clinical conditions which includes immune complex-mediated urticarial lesions with histological features of leukocytoclastic vasculitis, and low serum complement levels, and is frequently associated with systemic manifestations. Recurrent and chronic urticarial rash was the most common presentation seen in patients with HUVS. The Schwarz criteria, which take into account both clinical and laboratory results, were used to diagnose HUVS.[3] In 25% of individuals, HUVS can develop on alone or in association with other auto-immune conditions such as systemic lupus erythematosus, Sjogren syndrome, rheumatoid arthritis, juvenile rheumatoid arthritis, and mixed connective tissue disorder. Symptomatic management with antihistamines and non-steroidal anti-inflammatory agents may be helpful while severe systemic involvement often requires more aggressive therapies such as immunosuppressive agents with cytotoxic agents.

Conclusion

Hypocomplementemic urticarial vasculitis syndrome is characterized by urticarial/purpuric lesions with systemic manifestations, low serum complement levels, and histological features of leukocytoclastic vasculitis. Prednisone, hydroxychloroquine, or dapsone were often used in combination with antihistamines as symptomatic treatment.

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