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Knowledge and Awareness of Allergic Fungal Sinusitis among ENT Practitioners and General Medical Practitioners

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Original Research Article

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Abstract: Most of the times the etiology of sinusitis is typically viral, but it may also be bacterial or fungal. Allergic fungal sinusitis (AFS) is a relatively new and incompletely understood clinical entity with characteristic clinical, radiographic, and histopathological findings. Fungal sinusitis especially occurs in immunocompromised patients. The management of these types of patients is challenging. The present study was done to study the knowledge and awareness of the ENT practitioners and general medical practitioners. The study was done with the help of specially prepared questionnaire among ENT practitioners and the general medical practitioners. A total of 12 questions were formulated and validated by doing pilot study on 5 practitioners from each group. A total of 15 ENT practitioners and 43 general medical practitioners were included in the present study. The questionnaire were consisted of knowledge and awareness regarding sinusitis, types of sinusitis, allergic fungal sinusitis, the routes of transmission, precautions to be taken, various risk factors, clinical features, diagnostic criteria, complications associated with fungal sinusitis, treatment available for the fungal sinusitis, etc. The ENT practitioners were found to have more knowledge and awareness than the general medical practitioners and the difference was found to be statistically significant. The study had shown the knowledge and awareness of allergic fungal sinusitis was more among ENT practitioners than general practitioners. The knowledge and awareness of the general medical practitioners should be increased regarding allergic fungal sinusitis.
Keywords: Fungal sinusitis, General Medical Practitioners, Sinusitis

INTRODUCTION

Sinusitis is an inflammation of the mucous membrane of the paranasal sinuses. It infrequently occurs without concurrent inflammation of the nasal mucosa (rhinitis). Allergic fungal sinusitis (AFS) is a diverse form of noninvasive fungal disease categorized by a hypersensitivity response to fungal elements in the paranasal sinuses. It is a source of recurrent or refractory sinusitis in immunocompetent patients [1] Allergic fungal sinusitis (AFS) is a newly appreciated diagnosis, first described in the early 1980s. This entity is possibly underdiagnosed and should be considered in patients with chronic, intractable sinusitis if there is a history of atopy or asthma. When fungal elements are identified by histopathology or culture from sinus material, AFS must be distinguished from invasive disease, as treatment and prognosis are profoundly different [2,3]. The present study was done to study the knowledge and awareness of the ENT practitioners and general medical practitioners regarding allergic fungal sinusitis.

MATERIALS AND METHODS

This cross-sectional questionnaire study was done with the help of specially prepared questionnaire for the studying knowledge and awareness of the allergic fungal sinusitis among the ENT practitioners and the general medical practitioners. A total of 12 questions were formulated and tested by doing pilot study on 5 practitioners from each group. A total of 15 ENT practitioners and 43 general medical practitioners were included in the present study. The participants were selected of having more than 5 years of experience, so that they would be aware of the prevalence of sinusitis disease in the local area. All the practitioners were from the nearby city and village areas. The questions were given to the participants by personal hand to hand and the filled up answers were collected after a period of one day or immediately 15 minutes after giving the questionnaires. All the questions were of YES/ NO type and the YES answer was given score of 1, while NO was given score ‘zero’. Blank answer or double answer was not considered for the scoring. The questionnaire were consisted of knowledge and awareness regarding sinusitis, types of

sinusitis, allergic fungal sinusitis, the routes of transmission, precautions to be taken, various risk factors, clinical features, diagnostic criteria, complications associated with fungal sinusitis, treatment available for the fungal sinusitis, etc.

Inclusion criteria

- The ENT practitioners practicing more than 5 years.
- General medical practitioners practicing more than 5 years.

Exclusion criteria

- Freshly pass-out practitioners.
- All other specialty doctors in the nearby area.

Statistical analysis

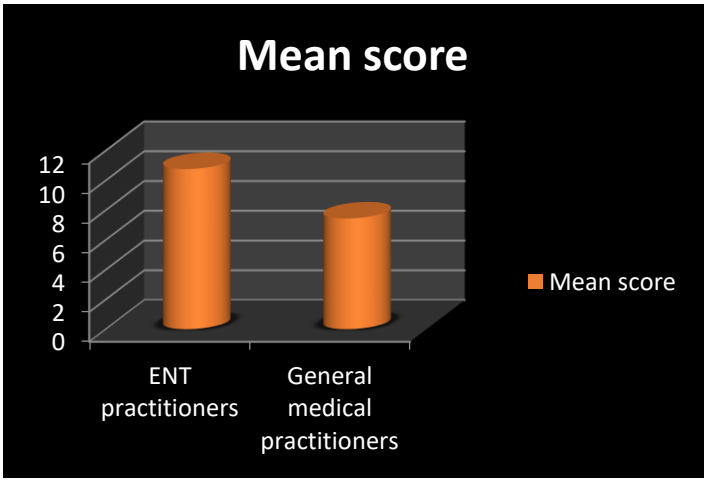
All the results were collected and tabulated and the statistical analysis was done using IBM SPSS statistics version 16 using student's t test.

RESULTS

The ENT practitioners were found to have more knowledge and awareness than the general medical practitioners and the difference was found to be statistically significant. (Student's test, $P<0.01$) (Table 1, Graph 1) Allergic fungal sinusitis was known to 98% of the ENT practitioners, while only 75 % of the general medical practitioners were aware of the presence of allergic fungal sinusitis. Similarly, the diagnostic criterion was understood among the 92 % of the ENT practitioners, while 67 % of the general medical practitioners were having knowledge of diagnostic criteria of allergic fungal sinusitis. Other questions like precautions to be taken, risk factors, complications, available treatment, etc, also shown the knowledge difference between ENT practitioners and the general practitioners.

Table-1: Comparison of the score of the ENT practitioners and General Medical practitioners using student's t test

Group	Number of participants	Mean score (out of 12)	Standard error of difference	T value	P value
ENT practitioners	15	10.76 ± 1.30	0.468	3.0451	<0.01
General medical practitioners	43	7.44 ± 1.64			



Graph-1: Graph showing the mean scores of the participants

DISCUSSION

Allergic fungal sinusitis is a newly valued noninvasive form of chronic sinusitis seen most often in atopic individuals who develop intractable sinusitis and nasal polyposis [4]. AFS can be distinguished clinically, histopathologically, and prognostically from other forms of chronic fungal sinusitis. There are 3 forms of invasive fungal sinusitis (acute, chronic, and granulomatous) and 2 types of noninvasive fungal sinusitis (fungal ball and AFS) [1]. The disease process in AFS is an IgE-mediated hypersensitivity reaction to fungal elements in the sinuses [5]. Patients typically have multiple positive immediate hypersensitivity skin tests to inhaled allergens, with the causative organism. The most common species related with AFS are the dematiaceous fungi, including Curvularia, Bipolaris, and Pseudallescheria, and the hyaline molds, such as Aspergillus and Fusarium. Serum IgE levels are frequently elevated; however, a normal total serum IgE level does not exclude AFS [6]. The white blood cell count is often normal with a flexible degree of eosinophilia [1].

Five Proposed Criteria for the Diagnosis of Allergic Fungal Sinusitis [1, 7]

- Allergic mucin is seen histologically and/or grossly.
- Allergic mucin fungal stain is positive and/or surgical sinus fungal culture is positive.
- An inflammatory infiltrate comprised of eosinophils and lymphocytes is seen in the sinus mucosa.
- Necrosis, granuloma, or fungal invasion of blood vessels, submucosa, or bone is not present.
- Diabetes, immunosuppressive disease, and use of immunosuppressive medication are absent, and other fungal diseases are excluded.

Exclusive features of AFRS that can alert the clinician to a probable diagnosis include a young (mean age is 22 years), immunocompetent patient with unilateral or asymmetric connection of the paranasal sinuses, a history of atopy, nasal casts, and polyposis, and a absence of noteworthy pain. Nasal casts are green to black rubbery formed elements made of allergic mucin [3,8]. Distinguishing imaging findings are a critical component of the AFRS diagnosis. CT findings will frequently demonstrate unilateral or asymmetric involvement of the sinuses. Allergic mucin provides the well-recognized heterogeneous signal intensity that is distinguishing of but not specific to AFRS [3,9]. The histopathological findings in AFRS are critical to the diagnosis. Microscopic review of mucosal specimens on hematoxylin-eosin (H&E) staining will show typical inflammatory infiltrate composed of eosinophils, lymphocytes, and plasma cells.6 The mucosa will be hypertrophic and hyperplastic but should not have evidence of necrosis, giant cells, granulomas, or invasion into surrounding structures. Such findings would advance support to a diagnosis of a fungal process other than AFRS [3]. This was the first kind of study showing the knowledge and awareness of the NET practitioners and the general medical practitioners regarding allergic fungal sinusitis. In the present study, the ENT practitioners were found to be having more knowledge as compared to the general medical practitioners.

It is significant to note that inspection of the unique allergic fungal mucin itself, and not the surrounding mucosa, is the most consistent indicator of disease. Grossly, this thick, highly viscous, variably colored mucin has been labelled as being similar to peanut butter or axle grease. Microscopically, the mucin often takes on a chondroid appearance with sheets of eosinophils, regularly with the presence of eosinophilic breakdown products or Charcot-Leyden crystals that can easily be seen with H&E staining. Fungi themselves do not stain with H&E staining; however, their negative image can sometimes be appreciated. Special stains containing silver are usually needed to appreciate the branching, noninvasive fungal hyphae [3].

CONCLUSION

The possibility of allergic fungal sinusitis should be considered in patients with intractable chronic sinusitis as allergic fungal sinusitis may present with severe complications. Seminars, symposium or monthly meeting should be arranged to increase the knowledge and awareness of the general medical practitioners.

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