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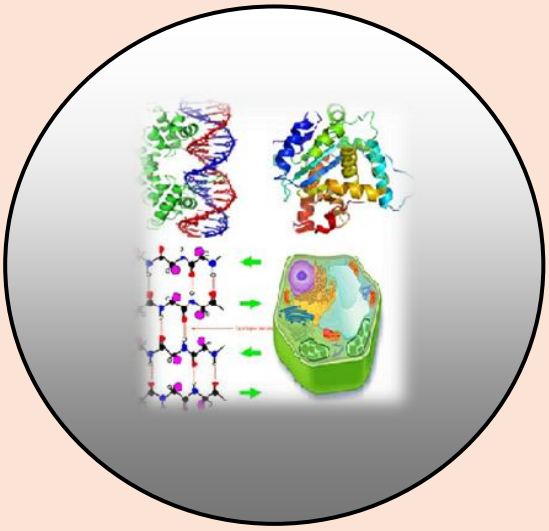

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RESEARCH PAPER

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A Study of Etiological Factors, Management, and Complications of Atrophic Rhinitis

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ABSTRACT

Chronic atrophic rhinitis is a chronic inflammation of nose characterised by atrophy of nasal mucosa, including the glands, turbinate bones and the nerve elements supplying the nose. The etiological factors blamed for its genesis are specific infections, autoimmunity, chronic sinus infection, hormonal imbalance, poor nutritional status, heredity, and iron deficiency anaemia. Although its prevalence is in increasing trend, the study of clinical cases of the AR is found very much less. To throw light on the etiology and the various modalities of the management and complications. A prospective study carried out for 1 year enrolled a total of 30 cases. The detailed study of each case of AR was carried out and data were recorded in the preformed case record form. Participants were grouped in one of the three treatment plan groups. They were followed for 6 months for the response of the treatment and the complications

Maximum incidence of AR was seen in the age group of 41–50 years (23.3%). It was common in women (60%) than in men (40%). The etiological factors showed 70% idiopathic type, and others were secondary to other diseases such as chronic sinusitis (16.6%), tuberculosis (10%), and leprosy (6.6%). The most common symptoms were crusting (100%) and fetor (97.6%). Investigations showed that 7o% participants had haemoglobin level below 10 g% and 90% had increased erythrocyte sedimentation rate. The majority of the participants managed with injection placentrex and surgery showed good response on follow-up.

No specific etiological factor is known for AR but possibly more than one factor is responsible for etiology. More prevalent in the people of lower socioeconomic status. Conservative treatment is acceptable, harmless, cheap, and effective line of treatment and can be taken as most effective approach. Maintenance of hygiene, balanced diet, avoidance of snuff inhalation, and smoking, as well as early diagnosis and prompt treatment of any nasal pathology can prevent the AR.

Keywords Atrophic rhinitis, Etiological Factors, Management and Complications.

INTRODUCTION

Nose is "the gate way" of our respiratory system. It is the most prominent aesthetic feature of the face and gives distinct appearance to the person. It is also the organ of smell, which adds the flavour to the person's life. Atrophic rhinitis (AR) is a chronic nasal disease that is characterized by progressive atrophy of the nasal mucosa and underlying bone of the turbinate and the presence of a viscid secretion that emits the intolerable foul odour coming from their nostrils. characteristic foul odour sometimes called ozaena (a stench).

It is also known as sclerotic rhinitis, dry rhinitis, rhinitis sicca, and open nose syndrome. Its incidence in western countries has declined nowadays, because of the improved socioeconomic conditions, whereas it is in increasing trend in Asia, Africa, Eastern Europe, Egypt, Greece, Hungary, Yugoslavia, India, Malaysia, and Philippines (Goodman and De Souza, 1973, Goodman and De Souza, 1989). The etiological factors blamed for its genesis are specific infections, autoimmunity, chronic sinus infection, hormonal imbalance, poor nutritional status, heredity, and iron deficiency anaemia. Chronic bacterial infection of the nose or sinus may be one of the causes of primary AR (Artiles et al., 2000, Zohar et al., 1974) Life is miserable in patients of AR because of its foul odour and impaired nasal function. While fragrance attracts somebody, foul smell gives feeling of dejection. The patients of AR are avoided socially because of the intolerable foul odour coming from their nostrils. Such social attitude creates psychological problems in the patients. Although its prevalence is in increasing trend, the study of clinical cases of the AR is found very much less. This study attempts to throw light on the etiology and the various modalities of the management and complications.

MATERIAL AND METHODS

It was a prospective study carried out at ENT Department hmm Jammu from Dec 2018 to November 2019. Permission from institutional ethics committee was taken before enrolment in the study. A total of 46 patients diagnosed as AR during this period. Patients who gave written informed consent were only included in the study. So, a total of 30 patients of AR could be included in the study. All the cases were studied in detail.

The data were collected according to the preformed case record form. The CRF contained parts. Demographic information pertaining to their age, sex, occupation, and personal history was recorded. History regarding the presenting symptoms such as nasal blockade, nasal discharge or bleeding, anosmia, crust formation, foul smelling, or any other complaint was taken elaborately. Duration and progress of the disease, past illness, and other relevant details were noted. A comprehensive clinical examination was carried out in all the patients.

Various investigations such as complete blood count, erythrocyte sedimentation rate (ESR), random blood sugar, renal function test, bleeding and clotting time, serum protein and urine routine, and microscopic and radiographic examinations of nasal sinus were carried out in all the patients. Specific investigations, such as MANTTOUX test, serum venereal disease research laboratory test, human immunodeficiency virus test, hepatitis B surface antigen test, and skin scrapping for leprosy, were carried out according to the need for the patients.

All the patients were managed by one of the three treatment plans as given below. According to the need, they were put into one of the following three treatment plans and accordingly divided in to three groups:

Treatment Plan 1: Nasal douche + 25% glucose with glycerine nasal drops + multivitamin tab. + iron tab.

GROUP 1

Treatment Plan 2: Nasal douche + 25% glucose with glycerine nasal drops + multivitamin tab. + iron tab. + Inj. placentrex 2 cc (0.5 cc intranasally in each atrophied inferior and middle turbinates) –

GROUP 2

Treatment Plan 3: Closure of nostril by Young's operation. -**GROUP 3**

The participants were followed up 0.5, 1, 2, 4, and 6 months after the first visit. During follow-up visit the response of different type of management was noted as good, fair, or poor. The response was judged according to diminution or disappearance of crusts, improvement in foul odour, and status of nasal mucosa.

GOOD RESPONSE Marked improvement in clinical features. Relief from crust and foul odour. Moist and pinkish mucosa.

FAIR RESPONSE Partially free from symptoms. Diminution of crusts. Moist mucosa.

POOR RESPONSE No change in complaints.

RESULTS

A total of 46 patients of AR were presented at the Otorhinolaryngology outpatient department from December 2016 to January 2017. Of them,30 patients could be included in the study. Table 1 shows the age of patients in the present series varied from 16 to 79 years. Maximum incidence, that is, 7 (23.3%) was noted in the age group of 41–50 years. The gender-wise distribution shows that the incidence of AR was common in woman 18 (60%) than in men 12 (40 %). Family history elaboration of participants shows that incidence of similar disease in first blood relative was 1 (3.3). Of 30 patients, 19 (63.3) were poorly nourished and 11 (36.7%) were fairly nourished. Figure 2 shows maximum patients, that is, 70% (21) had idiopathic type of AR and secondary causes of AR were seen in 9 patients, 5 (16.6%) patients had chronic sinusitis, 3 (10%) had tuberculosis, and 1(6.6%) had leprosy. Menstrual history of women shows that of 18 (60 %) women, 7 (38.8%) had menopause, 3 had irregular menstruation, and 8 had regular menstruation. Table 2 shows the common presenting symptoms and signs. The most common symptoms were crusting (100%) and fetor (96.6%). The most common findings on examinations were crust formation (100%), roomy nasal cavity (100%), and turbinate atrophy (100%) shown in almost all patients. A total of 21 (70%) patients had haemoglobin level below 10 gm%. ESR was high in 90.24% of patients. Three (10%) patients were positive for tuberculosis and 1 (6.6%) were positive for leprosy.

Maximum numbers of participants **63.3 % (19) were put into Treatment Plan 1**, **followed by Plan 2 26.6% (8) and Plan 310% (3**). Follow-up shows that 23.7 %participants of Group 1 show good response and 44.8% show fair response. While in Groups II and III, 67% participants show good response.

DISCUSSION

Maximum incidence was noted in the age group of 41–50 years. While the study by (Datti et al. 1974) and (Gadre, 1971) had the most common age group as11–30 years, the study by (Han-Sen, 1967) showed most common the age group as 21–30 years. In this study, the locality of the participants was the area where basic health concern was less. **They do not take treatment in early stage, so when they seek medical advice, they are usually in advanced stage**. Women were more common sufferers than men with approximate ratio of **2:1. Women predominance** might be due to hormonal changes. **Oestrogen imbalance** might be the etiological factor.

The majority of the patients were from poor class of the society. They were more prone to the disease due to poor nutrition, lack of hygiene, and their residence was in a congested (Tawde1983) locality. Moreover, they did not or could not take treatment due to financial restraints and lack of awareness. Nutrition of the patient was assessed clinically. In this study, 19 (63.3%) patients were poorly nourished and 11 (36.6%) were fairly nourished. It showed that AR was more common in fairly to poorly nourished people. Vitamin deficiencies, particularly of vitamin A, and iron deficiencies have been postulated to be a factor in the etiology. Poor nutrition decreases the body resistance making them more prone to infections. Therefore, the disease is more common among the people with diet poor in iron, proteins, and vitamins.

In this study, only 1 (3.3%) patients had family history of similar disease (sister–sister, daughter–mother). It might be incidental or because of the persons in the family exposed to same environmental conditions. In the study by Han-Sen, 1982, (8%) families had positive history. Young (Young, 1967) reported a family with an affected mother and daughter. Sibert, 1980, reported a family in which 8 of 15 siblings and their father were affected.

According to etiology, AR is of two types**: (1) primary, idiopathic** and (2**) secondary** because of some underlying disease. In this study, five patients had a history of chronic nasal discharge. Chronic infection of nose and paranasal sinuses was one of the factors in etiology of AR. Chronic granulomatous diseases such as tuberculosis and leprosy can present as AR. Also, 8 (26.6 %) participants had a history of snuff inhalation and 8 (26.6 %) were chronic smoker. Prolonged snuff inhalation causes direct contact of tobacco to the nasal mucosa leading to chronic rhinitis. Smoking destroys the ciliated cell of nasal mucosa and reduces secondary clearance of mucociliary action that can lead to AR.

Table 1. Showing percentage of subjects with particular signs and symptoms.

SYMPTOMS	PRESENT STUDY	SIGNS	PRESENT STUDY
Crusting	100% (30)	Crust formation	100% (30)
Feter	96.6% (29)	Roomy nasal discharge	100%(30)
Anosmia/ hyposmia	73.3% (22)	Turbinate atrophy	13.33(4)
Nasal discharge	53.3%(16)	Nasal deviation	10%(3)
Headache	36.6%(11)	Depressed nasal bridge	6.6% (2)
h/o Maggots	26.6%(8)	Septal perforation	3.3% (1)
Bleeding	24%(6)	Pale mucosa	33.3 % (10)

In this study, incidence of AR was maximally seen in **women with menopause**. It might be incidental because the study by Han-Sen, 1982 did not show any relation between menstrual history and AR. It suggested that there was no effect of oestrogen on disease and no definite relationship between menstruation and AR. The patients had variety of presenting symptoms such as crusting, foul-smelling nasal discharge (feter), anosmia, nasal blockade, headache, maggots, and bleeding. Like this study, the most common symptomatology of the studies by Gadre, 1971, Shehata, 1986 and Tawde, 1971 were crusting and feter, which were seen in nearly all patients of all studies. Similarly, the common findings on nasal examination were crust formation, roomy nasal cavity, turbinate atrophy, septum deviation, nasal bridge depression, pale mucosa, and septal perforation. Similar type of finding on nasal examination seen in the studies by Datti, 1974, Gadre, 1971 and Shehata, 1986. It shows that the common presenting symptoms are crusting and feter and the common findings on nasal examination are crust formation, atrophied turbinate, and roomy nasal cavity.

Iron deficiency anaemia seems to be an important predisposing factor in the etiology of AR, because 70% (21) participants had haemoglobin.

A total of 20 (68.5%) patients were benefited by Group I treatment. However, three out of five patients who had poor response were irregular in treatment and follow-up. In Group II participants, intranasal injection of placentrex was given in each inferior and middle turbinate of each nostril along with Treatment Plan 1. Results were very much similar with the study by Sinha et al., 1977, in which 76.6% participants had good response as compare to this study, where 67% participants had good response. All the patients who were operated (Treatment Plan 3) in this study tolerated the closure of the nostril well. Among three patients, two were relieved of their crusting, ozaena, and headache. On anterior rhinos copy they had pink healthy mucosa. The patient with fair response was a 45-year-old woman, having history of tuberculosis, which might be the factor for poor response. It shows that, of 30 patients treated by different regimes, 24 (80%) benefited whereas 6 (20%) showed poor response.

STRENGTH AND LIMITATION

There are very limited studies on atrophic rhinitis. Hence, this can provide a pool of data. However, the sample size is very less due to time constrain.

CONCLUSION

No specific etiological factor is known for AR but possibly more than one factor is responsible for etiology. It was found to be more prevalent in the people of lower socioeconomic status. Conservative treatment is an acceptable, harmless, cheap, and effective line of treatment and can be taken as the most effective approach. Maintenance of hygiene, balanced diet, avoidance of snuff inhalation, and smoking, as well as early diagnosis and prompt treatment of any nasal pathology can prevent the AR.

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