

A study of etiological factors, management, and complications of atrophic rhinitis

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Abstract

Background: Atrophic rhinitis (AR) is a chronic nasal disease that is characterized by progressive atrophy of the nasal mucosa and underlying bone of the turbinates. The etiological factors blamed for its genesis are specific infections, autoimmunity, chronic sinus infection, hormonal imbalance, poor nutritional status, heredity, and iron deficiency anemia. Although its prevalence is in increasing trend, the study of clinical cases of the AR is found very much less.

Objectives: To throw light on the etiology and the various modalities of the management and complications.

Materials and Methods: A prospective study carried out for 2 years enrolled a total of 41 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.

Result: Maximum incidence of AR was seen in the age group of 41–50 years (24.4%). It was common in women (65.9%) than in men (34.15%). The etiological factors showed 77% idiopathic type, and others were secondary to other diseases such as chronic sinusitis (12.5%), tuberculosis (7.5%), and leprosy (4.9%). The most common symptoms were crusting (100%) and fetor (97.6%). Investigations showed that 73.2% participants had hemoglobin level below 10 g% and 90% had increased erythrocyte sedimentation rate. The majority of the participants managed with injection placentex and surgery showed good response on follow-up.

Conclusion: 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.

KEY WORDS: Atrophic rhinitis, etiological factors, management, 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 flavor 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 turbinates and the presence of a viscid secretion that emits a

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characteristic foul odor sometimes called ozena (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 socio-economic conditions, whereas it is in increasing trend in Asia, Africa, Eastern Europe, Egypt, Greece, Hungary, Yugoslavia, India, Malaysia, and Philippines.^[1,2] The etiological factors blamed for its genesis are specific infections, autoimmunity, chronic sinus infection, hormonal imbalance, poor nutritional status, heredity, and iron deficiency anemia. Chronic bacterial infection of the nose or sinus may be one of the causes of primary AR.^[3,4]

Life is miserable in patients of AR because of its foul odor 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 odor 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.

Materials and Methods

It was a prospective study carried out at SCL General Hospital, Saraspur, Ahmedabad, Gujarat, India, between June 2008 and November 2010. Permission from institutional ethics committee was taken before enrollment in the study.

A total of 64 patients diagnosed as AR during this period. Patients who gave written informed consent were only included in the study. So, a total of 41 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 blockage, 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 Mantoux 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.

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

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

1. Treatment Plan 3: Closure of nostril by Young's operation

According to different treatment plans, the patients were divided into three groups, such as Group I follows Treatment Plan 1, Group II follows Treatment Plan 2, and Group III follows Treatment Plan 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 odor, and status of nasal mucosa.

Good response	Marked improvement in clinical features. Relief from crust and foul odor. Moist and pinkish mucosa.
Fair response	Partially free from symptoms. Diminution of crusts. Moist mucosa.
Poor response	No change in complaints.

Result

A total of 58 patients of AR were presented at the Otorhinolaryngology outpatient department from June 2008 to November 2010. Of them, 41 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, 24.4% (10) was noted in the age group of 41–50 years. The gender-wise distribution shows that the incidence of AR was common in woman (65.9%) than in man (34.15%). Family history elaboration of participants shows that incidence of similar disease in first blood relative was 4.9% (2). Of 41 patients, 25 (60.9%) were poorly nourished and 13 (31.7%) were fairly nourished.

Figure 2 shows maximum patients, that is, 77% (31) had idiopathic type of AR and secondary causes of AR were seen in 10 patients, 5 (12.5%) patients had chronic sinusitis, 3 (7.5%) had tuberculosis, and 2 (4.9%) had leprosy. Menstrual history of women shows that of 27 women, 15 (55.6%) had menopause, 4 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 (97.6%). 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 31 (73.2%) patients had hemoglobin level below 10 gm%. ESR was high in 90.24% of patients. Three (7.3%) patients were positive for tuberculosis and 2 (4.9%) were positive for leprosy.

Table 1: Presenting symptoms and signs of patients

Symptoms	Present study	Signs	Present study
Crusting	41 (100%)	Crust formation	41 (100%)
Feter	40 (97.6%)	Roomy nasal cavity	41 (100%)
Anosmia/hyposmia	31 (75.6%)	Turbinates atrophy	41 (100%)
Blockage	26 (63.4%)	Septum deviation	6 (14.6%)
Nasal discharge	23 (56.1%)	Depressed nasal bridge	4 (9.8%)
Headache	21 (51.2%)	Septal perforation	1 (2.4%)
H/o maggots	12 (29.3%)	Pale mucosa	33 (80.5%)
Bleeding	11 (26.8%)	—	—

Table 2: Response of the various treatment plans at the time of follow-up

Response	Group 1	Group II	Group III
Good	11 (37.9%)	6 (67%)	2 (67%)
Fair	13 (44.8%)	2 (22%)	1 (33%)
Poor	5 (17.3%)	1 (11%)	0
Total patients	29	9	3

Maximum numbers of participants (29) were put into Treatment Plan 1, followed by Plan 2 (9) and Plan 3 (3). Follow-up shows that 37.9% (11) 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.*^[5] and Gadre^[6] had the most common age group as 11–30 years, the study by Han-Sen^[7] 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. Estrogen 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 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, 25 (60.9%) patients were poorly nourished and 13 (31.7%) 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 2 (4.9%) 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,^[7] 8 (8%) families had positive history. Young^[8] reported a family with an affected mother and daughter. Sibert^[9] 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

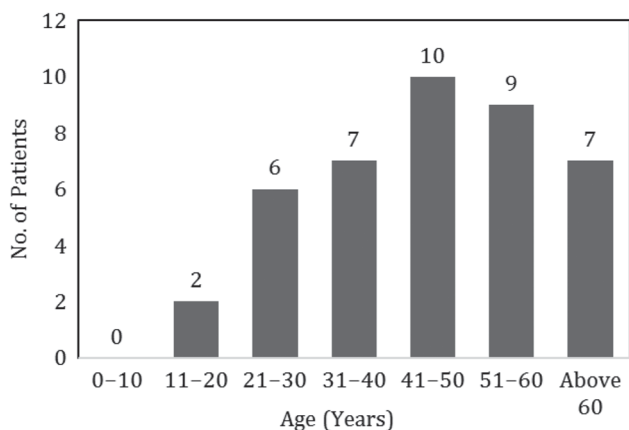


Figure 1: Age-wise distribution of patients of atrophic rhinitis.

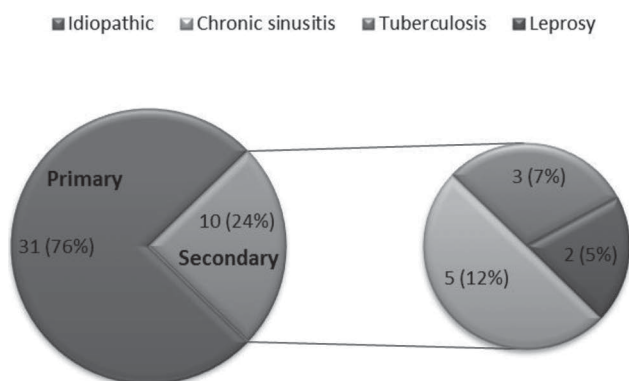


Figure 2: Causes of atrophic rhinitis.

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, 10 (24.4%) participants had a history of snuff inhalation and 10 (24.4%) 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.

In this study, incidence of AR was maximally seen in women with menopause. It might be incidental because the study by Han-Sen^[7] did not show any relation between menstrual history and AR. It suggested that there was no effect of estrogen 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 blockage, headache, maggots, and bleeding [Table 1]. Like this study, the most common symptomatology of the studies by Gadre,^[6] Shehata,^[10] and Tawde^[11] 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,^[5] Gadre,^[6] and Shehata.^[10] 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 anemia seems to be an important predisposing factor in the etiology of AR, because 73.21% (31) participants had hemoglobin <10 g% and also the study by Chatterji^[12] found average hemoglobin of 9 g/dL. ESR was high in majority of the patients suggesting it to be a chronic disease.

A total of 24 (82.7%) 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 placentex 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.*,^[13] 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, ozena, and headache. On anterior rhinoscopy 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 41 patients treated by different regimes, 35 (85.4%) benefited whereas 6 (14.6%) showed poor response.

Strength and Limitation

As there was no study found in this locality of the country, this study may provide basic data for further studies. Sample size was less because of time constrain. Study can be conducted with more patient population.

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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