

## Clinical profile of patients with Atrophic Rhinitis – A detailed study

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### Article History

Received: 15 Nov 2015

Revised: 18 Nov 2015

Accepted: 20 Nov 2015

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### ABSTRACT

**Introduction:** Atrophic Rhinitis is a condition characterized by extensive crusting of the nose, anosmia and foul smell that causes much misery to the patient due to its chronic course and limited treatment options. The exact etiology of this condition is unknown. Various theories have been proposed to explain its occurrence which include role of hereditary factors, endocrinal disturbance, racial factors, nutritional deficiency [Vitamins A, D & iron], infective etiology & autoimmune disorders. **Aims & Objectives:** We have conducted a prospective study in our hospital with the following aims. (1) To determine the complete profile of patients with atrophic rhinitis with respect to their sex ratio, age of presentation, education, occupation, residence, duration of symptoms at presentation, personal habits etc. (2) To determine the various clinical presentations of the condition. (3) To compare findings with available literature. **Materials & Methods:** All patients were chosen from the OPD on the basis of a clinical diagnosis following which a detailed history was taken along with clinical examination. All the acquired information was noted in a specially prepared proforma. In all cases we have done nasal mucosal biopsy for a definitive diagnosis. A nasal swab culture and CT scan of the nose & paranasal sinuses was also advised. **Results:** A total of 60 cases were diagnosed over 1 year. The female: male ratio of patients encountered in this study was 6.5:1. Most patients were in the age-group between 21-30 years (36.6%). 55% patients were illiterate and 63.3% of them had a rural background. Most of them had a history of duration of complaints between 6 months and 2 years at presentation. Crusting of the nose was the most commonly encountered (56 cases i.e. 93.3%) followed closely by foul smell (52 cases i.e. 86.6%) and anosmia (47 cases i.e. 78.3%). The most common organism isolated from nasal swab culture was Pseudomonas followed by Klebsiella. CT findings revealed evidence of sinusitis (involvement of one or more sinuses) in 38 cases (63.3%). **Conclusion:** The findings of the study have been compared with the available literature and summarized. We find that most of our findings are in line with previous studies.

**KEYWORDS:** Anosmia, Atrophic Rhinitis, Foul smelling nasal discharge, Ozaena.

### INTRODUCTION

Atrophic rhinitis is a chronic inflammatory condition of the nose that is characterized by atrophy of the nasal mucosa and also the underlying turbinates located in the lateral nasal wall. The exact etiology of the condition is not known. Various theories have been proposed to explain its occurrence which includes role of hereditary factors, endocrinal disturbance, racial factors, certain nutritional deficiencies [Vitamins A, D & iron], infective etiology [Klebsiella, Pseudomonas, diphtheroids etc.] & autoimmune disorders<sup>1</sup>. Traditionally, patients with this condition are classified into two groups – those with primary atrophic rhinitis if their condition developed in a

previously healthy nose and secondary atrophic rhinitis if the condition was preceded by nasal surgery, trauma, or chronic granulomatous disease<sup>2</sup>. Clinically on examination, most patients show presence of greenish-yellow crusts inside the nasal cavity which emit characteristic foul odour (ozaena). The latter is typically reported by the people around the patient and the patient is oblivious to it as they develop progressive anosmia. Once the crusts are removed, it reveals a roomy nasal cavity. Atrophic rhinitis may have varied clinical presentations<sup>3</sup> with most patients complaining of crusting of the nose, foul smell (typically complained by

the others), nasal stuffiness, hyposmia or anosmia (in late stages) and epistaxis (common especially when the patient tries to remove the crusts). Other complaints like recurrent sinusitis and headache are also common. Rarely clinical presentations include coexistent septal perforations and maggots in the nose. Histopathological studies show that the respiratory ciliated columnar epithelium of the nasal cavity is replaced stratified squamous epithelium along with atrophy of the seromucinous glands. There is also obliterative endarteritis leading to resorption of the turbinates and widening of the nasal chambers<sup>3</sup>. The condition persists for years and tends to improve spontaneously in middle age. Treatment options for this condition are limited and patient satisfaction is often poor. Several medical therapeutic regimens including alternative forms of medicine have been proposed in the past. But the most effective means of control of symptoms is the maintenance of nasal hygiene (by regular nasal douching to remove the crusts). Surgical interventions for this condition are also not very satisfactory with frequent failures and recurrences<sup>4</sup>.

#### AIMS AND OBJECTIVES

We have performed a prospective study on atrophic rhinitis in our hospital over a one year period with the following aims & objectives:

- 1.To determine the complete clinical profile of patients with atrophic rhinitis with respect to age, sex, education, residence, personal habits, duration of symptoms prior to presentation etc.
- 2.To determine the various clinical presentations of the condition.
- 3.To compare findings with available literature.

#### MATERIALS & METHODS

The study was performed at the department of ENT in our hospital at Moradabad over a period of 12 months from October 2014 to September 2015. Prior permission was taken from the ethical committee of the hospital before undertaking the study. Informed consent was also taken from all patients who were chosen for the study. Patients were all chosen from those attending the ENT OPD on the basis of clinical findings of atrophic rhinitis. We diagnosed a total of 60 cases during the above mentioned period and they were included in the study. In every case, a detailed history was taken with special emphasis on the following points:

- Sex ratio of patients
- Age at presentation
- Residence (rural or urban)
- Literacy
- Occupation
- Personal habits
- Presenting complaints
- Duration of symptoms prior to presentation
- Previous treatment if any

**Table 1: Age & sex distribution of patients.**

Age group	Male	Female	Total
11-20	2	16	18
21-30	3	19	22
31-40	2	7	9
41-50	1	4	5
51-60	0	3	3
61-70	0	0	0
71-80	0	3	3

**Table 2: Presenting complaints and findings.**

Complaints	Number of cases	%
Crusting of nose	56	93.3
Foul smell	52	86.6
Anosmia	47	78.3
Sinusitis (diagnosed on basis of CT findings)	38	63.3
Nasal obstruction	37	61.6
Headache	33	55
Epistaxis	11	18.33
Maggots in nose	4	6.7

**Table 3: Nasal swab culture report.**

Organism isolated	Number of patients	%
Pseudomonas sp.	21	35
Klebsiella sp.	17	28.3
Staphylococcus aureus	9	15
Streptococcus pneumoniae	2	3.3
Mixed growth	4	6.6
No growth obtained	7	11.6

A thorough otolaryngological examination was done in every case. The history and relevant clinical findings were all noted in a standard proforma sheet specifically prepared for the purpose. A nasal mucosal biopsy and nasal swab culture was also done in all cases to establish a definitive diagnosis and also to identify the bacteria commonly associated with this condition. A CT scan of the nose & paranasal sinuses was also a part of the investigations to identify underlying sinusitis which is very common in this condition.

The findings have been analyzed in detail in regard to the various parameters mentioned above. They have also been compared with the available literature.

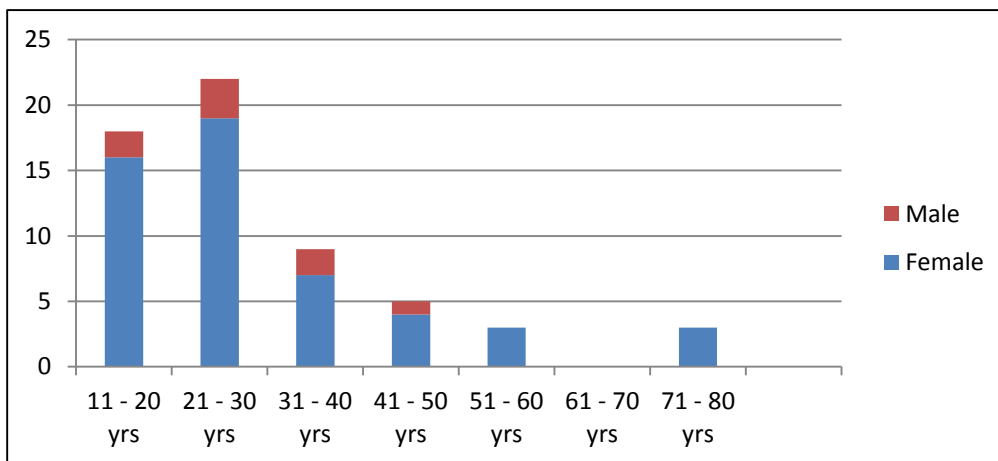
#### RESULTS

Out of a total of 60 patients, 52 were females and 8 were males. In other words, the female: male ratio of patients in this study is 6.5:1.

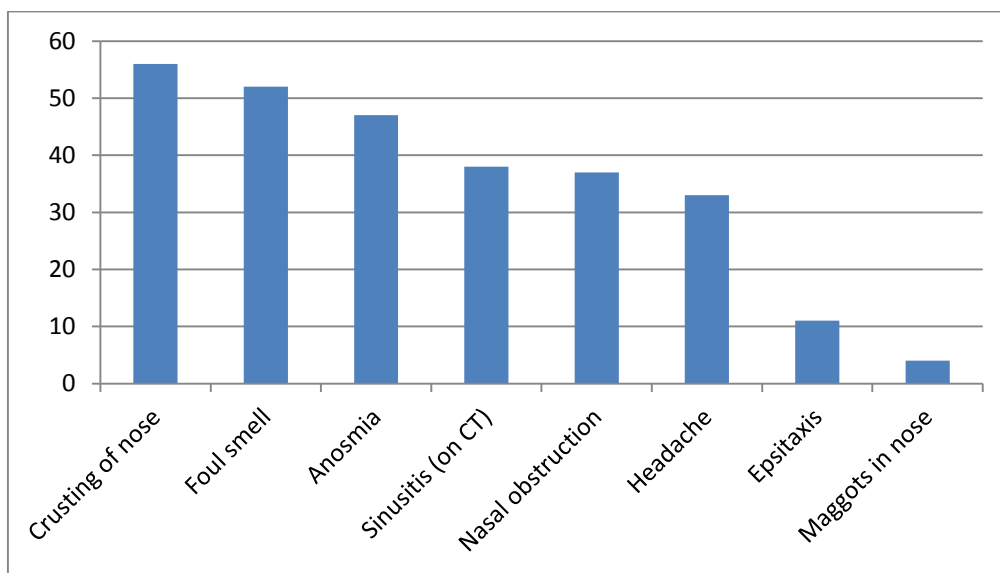
The age and sex-wise distribution of cases is shown in Table – 1 and also depicted pictorially in Bar chart - 1. Youngest patient was 13 years old and the oldest was 72 years old. Most patients are in the age-group between 21-30 years (22 patients i.e. 36.6%) followed by the 10-20 years age-group (18 patients i.e. 30%). In other

words, two-thirds of the cases were seen within the 10-30 year age group (40 patients i.e. 66.6%). Interestingly no male patients were encountered above the age of 50. Overall, 33 patients (55%) were illiterate and 27 (45%) were literate as shown in Pie chart – 1. 38 patients (63.3%) were from rural background while

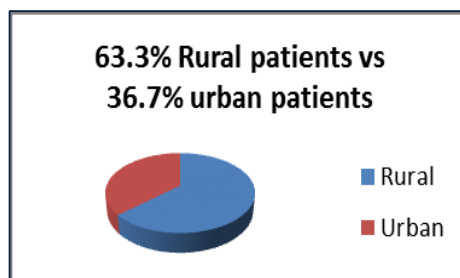
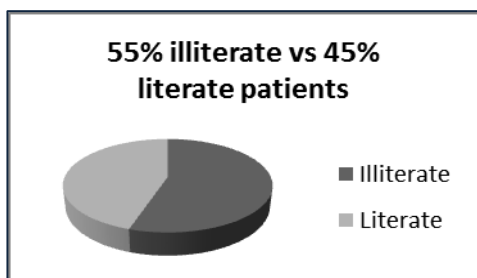
22 patients (36.7%) were having urban residence as shown in Pie chart – 2. 23 patients (38.3%) gave a positive history of habit of regular pond bathing. Duration of complaints prior to presentation varied from 3 months to more than 20 years with most cases presenting between 6 months to 2 years of duration.



**Fig 1: Showing age & sex distribution of patients**



**Fig 2: Showing various presentations of atrophic rhinitis.**



The most common presenting complaint was crusting of the nose (56 cases i.e. 93.3%) followed closely by foul smell complained by others (52 cases i.e. 86.6%). Anosmia was the third most common complaint (47 cases i.e. 78.3%).

Table – 2 summarizes all the presenting complaints and Bar chart – 2 depicts the same pictorially. Nasal swab culture revealed that the commonest organism isolated

was Pseudomonas in 21 cases (35%). Klebsiella was encountered in 17 cases (28.3%) and Staph. aureus in 9 cases (15%). No growth was found on culture in 7 cases (11.6%). Table – 3 shows the complete findings of the culture reports.

Radiologically there was evidence of sinusitis (involvement of one or more sinuses) in 38 cases (63.3%) at diagnosis.

## DISCUSSION

That atrophic rhinitis is more predominant in females is a well-established fact. The ratio of involvement of female: male varies from study to study. Our study shows a ratio of 6.5:1. A ratio of 5.6:1 was reported in 1999 in a study of 46 Thai patients<sup>5</sup>. A more recent case series of 75 patients reported from Orissa, India by Mishra et al.<sup>6</sup> however puts the figure at 1.5:1.

Age-wise distribution of patients shows that most patients are in the age-group between 21-30 years (22 patients i.e. 36.6%) followed by the 10-20 years age-group (18 patients i.e. 30%). In other words, two-thirds of the cases were seen within the 10-30 year age group (66.6%). This is in complete agreement to the findings of one of the studies mentioned above<sup>6</sup>.

33 out of the 60 patients (55%) patients were illiterate and most of them i.e. 38 patients (63.3%) were also from rural background. This corroborates with the Thai study<sup>5</sup> which puts the figure for rural residence at 69.6%.

Crusting of the nose was the most commonly encountered presenting complaint in our study (56 cases i.e. 93.3%) followed closely by foul smell complained by others (52 cases i.e. 86.6%). Anosmia was the third most common complaint (47 cases i.e. 78.3%). A series of 90 cases reported by Bist et al.<sup>7</sup> also made a similar observation. They reported that nasal crusting (most common) along with odour and atrophy of mucosa were the most consistent findings in such patients. Among other complaints, we found that a sizeable proportion of 33 patients (55%) also complained of headache. Review of literature shows varied incidences with one study reporting a figure as high as 78.4% patients complaining of headache<sup>6</sup>.

Nasal swab culture results showed that the three most common organisms isolated was *Pseudomonas* in 21 cases (35%), *Klebsiella* in 17 cases (28.3%) and *Staph aureus* in 9 cases (15%). Bist et al.<sup>7</sup> also found *Pseudomonas* as the most common isolate in 37% cases. Bunnag et al.<sup>5</sup> however found *Klebsiella* as the commonest growth. Radiologically there was evidence of sinusitis (involvement of one or more sinuses) in 38 cases (63.3%) at diagnosis in our study. One of the above mentioned studies however found radiological evidence of different grade of sinusitis in 87.7% cases<sup>7</sup> while the Thai study<sup>5</sup> found evidence of sinusitis in 58.7% of either plain x-rays or CT scans.

## CONCLUSION

Atrophic rhinitis is a chronic condition that is encountered quite commonly in our day to day practice. We have performed a prospective study to determine the complete patient profile of these patients. Our findings are summarized as follows:

- Females were encountered much more commonly than males in a ratio of 6.5:1. Most

patients were encountered in the age-group between 21-30 years (22 patients i.e. 36.6%) followed by the 10-20 years age-group (18 patients i.e. 30%). In other words, two-thirds of the cases were seen within the 10-30 year age group (66.6%).

- Overall, 55% were illiterate and 63.3% patients were from rural background.
- 38.3% of cases gave a positive history of habit of regular pond bathing and most cases had duration of complaints between 6 months to 2 years at presentation.
- Crusting of the nose was the most commonly encountered presenting complaint in our study (56 cases i.e. 93.3%) followed closely by foul smell complained by others (52 cases i.e. 86.6%). Anosmia was the third most common complaint (47 cases i.e. 78.3%).
- Nasal swab culture revealed *Pseudomonas* in 21 cases (35%) followed closely by *Klebsiella* in 17 cases (28.3%).
- CT scan findings showed evidence of sinusitis (involvement of one or more sinuses) in 38 cases (63.3%).

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**How to cite the article:** Chatterji P, Kumar A, Singh BP. Clinical profile of patients with Atrophic Rhinitis – A detailed study. *Int J Med Res Prof.* 2015, 1(3);111-14.