



PREGNANCY RHINITIS IN SOUTH INDIAN WOMEN

Obstetrics & Gynaecology

Gagandeep Kour*	Assistant Professor, Department of Obstetrics & Gynaecology, Kalpana Chawla Government Medical College, Karnal, Haryana, India. *Corresponding Author
Amardeep Singh	Fellow, Skull Base Surgery, Department of ENT, All India Institute of Medical Sciences, New Delhi, India.
Latha V	Professor, Department of Obstetrics and Gynaecology, Basaveshwara Medical College and Hospital, Chitradurga, Karnataka, India.

ABSTRACT

Background: Pregnancy rhinitis (PR) is a common condition which is misclassified and under-diagnosed. It is mainly attributed to changing levels of sex hormones during pregnancy which returns to normal once the pregnancy is over. Uncontrolled rhinitis during pregnancy may affect quality of life for mother and may have deleterious effect on fetus. **Objectives of study:** Objective of present study is to assess the prevalence, frequency of signs, symptoms and response to treatment in PR in South Indian women. **Material and methods:** In this prospective study, the pregnant patients with symptoms and signs of PR were enrolled. Anterior rhinoscopy was performed for signs of congestion, discharge and mucosal changes. Patients were followed during pregnancy upto two weeks post-partum. **Results:** Overall incidence of pregnancy rhinitis was 10% in pregnant women. Major presenting symptoms were nasal discharge, nasal obstruction, excessive sneezing and post-nasal drip. Quality of life was affected to variable extent in two thirds of patients. Response to the treatment was satisfactory to good in 79% of cases. Twenty one percent patients did not notice any subjective change in the symptoms. **Conclusion:** PR has significant impact on quality of life. Safety of therapeutic measures, advice and conservative practice form the mainstay of treatment.

KEYWORDS

Pregnancy rhinitis, nasal congestion, triggering factors, outcomes.

INTRODUCTION

In late nineteenth century, several scientific publications reported potential physiological and pathological connection between nasal symptoms and female sexual system[1]. Observations of cyclic changes in the symptomatology related to the menstrual cycle were expanded to the changes observed during pregnancy in 20th century [2]. The metabolic, physiological and endocrinological variations during pregnancy lead to functional alterations in every organ system to variable extent[3]. Some of these changes are associated with clear rhinorrhea and clinical examination shows oedematous nasal mucosa[4]. These changes account for a distinct condition known as 'Pregnancy Rhinitis (PR)'. Non-specific rhinitis during pregnancy must be distinguished from PR which is a separate entity. PR has been defined as nasal congestion in the last six or more weeks of pregnancy without other signs of respiratory tract infection and no known allergic cause that disappears completely within two weeks after delivery [5]. PR has lately been observed as a clinical condition to be taken seriously because poorly controlled sinu-nasal disease may lead to significant adverse effects on quality of mother's life as well as pregnancy outcomes[6,7].

Majority of authors claim that rising serum levels of hormones like oestrogen, progesterone and placental growth hormones are responsible for PR[8,9]. The possible connection of nasal congestion with snoring and Obstructive Sleep Apnea Syndrome (OSAS) may trigger negative effects like gestational hypertension, pre-eclampsia, restriction of intra-uterine growth and lower APGAR score[5,10]. PR may create problems during labour due to elevated respiratory requirements[11]. Present study has been primarily conducted to assess the prevalence, frequency of signs and symptoms of PR and response to treatment in South Indian women.

MATERIAL AND METHODS

A prospective observational study was conducted in the Department of Otorhinolaryngology and Department of Obstetrics and Gynaecology in our Institution which is a tertiary health care institution. Prior approval of Institutional Ethical Committee was obtained. Period of study extended from November 2019 to October 2020. Total number of patients who attended the OPD wing of obstetric department for checkup were recorded. The pregnant women who had signs and symptoms suggestive of rhinitis during any period of pregnancy and agreed to participate in study were explained about the procedure. Written consent was taken from the enrolled patients. The patients with congestion, discharge or any other nasal pathology were referred to ENT OPD for rhinoscopy or any other investigation if required. Pre-structured Proforma of signs and symptoms was filled up at the time of

first visit of patient and updated on future visits. Registered patients were also contacted on phone in case they were not able to attend hospital on due dates. Patients with history of allergy, frequent airway infection, nasal obstruction before pregnancy and those who did not respond physically or telephonically were excluded from this study. Recorded parametric variables were tabulated in the form of frequency and percentage to assess the prevalence of PR, symptoms, signs and response to the treatment of PR in South Indian women.

RESULTS:

Total number of patients attending the OPD of Obstetrics and Gynaecology during study period was 480. The frequency of patients who fulfilled the criteria of PR was 48 (10%) of the OPD attendees. Majority of patients (58%) were in the age group of 26-35 years (Table-1).

Table 1: Demographic Characteristics

Age group	Frequency (n=48)	Percentage (%)
Upto 25 years	16	34
26-35 years	28	58
36 years and above	04	08

Commonest symptom of PR was nasal discharge observed in 81% of total number of PR patients. Nasal obstruction was the second common presentation found in 69% cases. Excessive sneezing and post-nasal drip were observed in 58% of patients in each group. Cough, fever, headache, and sleep disturbances were recorded in 54%, 15%, 8% and 6% cases respectively (Table-2).

Table 2: Symptoms of Rhinitis

Symptoms	Frequency (n=48)	Percentage (%)
Nasal discharge	39	81
Nasal obstruction	33	69
Excessive sneezing	28	58
Post nasal drip	28	58
Cough	26	54
Fever	07	14
Headache	04	08
Sleep disturbances	03	06

Among the triggering factors, exposure to cold (63%) was the highest risk factor followed by dust (31%), smoking (15%), perfumes (10%), flowers (10%), food (6%) and others (4%)(Table-3).

Table 3: Triggering Factors

Trigger factors	Frequency (n=48)	Percentage (%)
Cold	30	63
Dust	15	31
Smoke	07	15
Perfumes	05	10
Food	05	10
Flowers	03	06

Effect of PR on quality of life was reported by 65% of cases whereas 35% of patients did not notice any significant influence of PR on the quality of life (Table-4).

Table 4: Effects on quality of life of patient

Affected/ Not affected	Frequency (n=48)	Percentage (%)
Affected	31	65
Not Affected	17	35

Non-steroidal drug treatment (Local and systemic) led to improvement in 67% cases whereas 6% of patients were prescribed steroid nasal spray because of poor response to the general treatment. Twenty seven percent patients showed improvement by avoidance of triggering factors (Table-5).

Table 5: Treatment History

Treatment History	Frequency (n=48)	Percentage (%)
Non-steroidal drug treatment	32	67
Steroid nasal spray	03	06
Preventive therapy	13	27

Satisfactory to good response was shown by 79% of patients but 21% women did not notice any subjective change in the symptoms (Table-6).

Table 6: Response to treatment

Response to treatment	Frequency (n=48)	Percentage (%)
Good	09	19
Better	11	23
Satisfactory	18	37
No Change	10	21

DISCUSSION

Pregnancy rhinitis (PR) has evolved only lately and has gained importance in recent years because of important impact on the quality of life of the pregnant women as well as unfavourable outcome for the fetus[5,10]. It is caused by increased interstitial fluid volume seen during pregnancy and is worsened by direct effect of estrogen on the nasal mucosa which enhances vascularity and mucosal oedema [12]. Nasal congestion causes disturbance of sleep, fatigue, anxiety, retarded concentration and headache[13]. Discomfort in nasal breathing increases the tendency for mouth breathing and snoring which potentially leads to reduction of oxygen supply to fetus [10].

A wide range of PR (9-42%) has been reported in various studies [11,14,15]. The characteristics of PR necessitate prospective cohort studies for detection of cumulative incidence. In our study, over all frequency of nasal symptoms during pregnancy was 21%. Among these, only 11% fulfilled the criteria of PR i.e. symptoms occurring during pregnancy and disappearing two weeks post-partum. Prominent symptoms were nasal discharge and nasal obstruction. These symptoms lead to oral breathing. Decreased nasal breathing interferes with nitric oxide (NO) transmission from nasal cavity to lungs. NO is mainly produced by maxillary sinuses which enters the lungs and improves pulmonary oxygenation. Reduction in pulmonary NO inhalation leads to maternal hypertension and preeclampsia [5,16]. Decreased maternal oxygenation potentially minimizes the oxygen supply to the fetus which results in intra-uterine growth restriction and lower APGAR score[17]. Additionally, mouth breathing leads to disturbance of filtering, warming and humidification of inhaled air[18].

Major triggering agents of PR in our study were cold (63%) and dust (31%). Study conducted in Swedish County recorded smoking as the most common factor responsible for 69% enhancement in PR cases[11]. These differences are due to regional variations and social behavior. Avoidance of triggering factors plays an important role in retarding PR related symptomatology.

About two thirds (65%) of PR patients reported disturbance of sleep,

anxiety, reduced concentration and headache which led to distortion of quality of life to variable extent. Studies have shown that anxiety and disturbed sleep interfere with fetal development which may result in adverse fetal outcome[19].

As far as treatment of PR is concerned, majority of our patients (67%) were prescribed nasal wash, saline nasal drops, steam inhalation and oral anti-histaminic. Nasal steroid spray was prescribed to 6% cases who did not respond to the non-steroidal therapy. Remaining twenty three percent cases had mild symptoms and did not agree for drug treatment due to social reasons. They were educated to avoid triggering factors, raising the head end of the bed and gentle physical exercises which have decongestant effect and benefits in controlling sleep disturbances due to nasal congestion [20].

CONCLUSIONS

We observed the incidence of PR in 10% cases which is less frequent than previously described. Effects of PR compromise the respiratory system and affect the patient's quality of life which may lead to adverse maternal and fetal outcome. Frequency of symptoms of PR and triggering factors vary in different geographical areas; therefore, appropriate management plays a major role for adequate treatment, considering the safety profile and current evidence of available means and medication.

Funding: No funding sources

Conflict of Interest: None declared

Ethical Approval: Approved

REFERENCES:

- MacKenzie JN. The physiological and pathological relations between the nose and the sexual apparatus of man. *Alienist Neurol* 1898; 19: 219-39.
- Mohun M. Incidence of vasomotor rhinitis during pregnancy. *Arch Otolaryngol* 1943; 37: 699-709. *Arch Otolaryngol* 1943;37(5):699-709. (doi: 10.1001/archotol.1943.00670030713009)
- Incaudo GA. Diagnosis and treatment of allergic rhinitis and sinusitis during pregnancy and lactation. *Clin Rev Allergy Immunol* 2004; 27: 159-77.
- Shiny Sherlie V and Varghese A. ENT changes of pregnancy and its management. *Indian J Otolaryngol Head Neck Surg* 2014; 66(Suppl 1); (DOI 10.1007/s12070-011-0376-6)
- Ellegard E. Pregnancy rhinitis. *Immunol Allergy Clin N Am*, 2006; 26(1): 119-35.(doi: 10.1016/j.iac.2005.10.007)
- Gregg Goldstein and Satish Govindaraj. Rhinologic issues in pregnancy. *Allergy and Rhinol* 3:e13-e15,2012. (doi: 10.2500/ar.2012.3.0028)
- Dzieciolowska-Baran E, Teul-Swinarska I, Gawlikowska-Sroka, Poziomkowska I and Zietek Z. Rhinitis as a cause of respiratory disorders during pregnancy. *Adv Exp Med Biol* 2013; 755: 213-20. (doi: 10.1007/978-94-007-4546-9_27)
- Ulkumen B, Ulkumen BA, Pala HG, Celic O, Sahin N, Karaca G et al. Pregnancy rhinitis in Turkish women: Do gestational week BMI and parity affect nasal congestion? *Pak J Med Sci* 2016; 32(4): 950-4. (doi: http://dx.doi.org/10.12669/pjm.324.10164)
- Toppozada H, Michaels L, Toppozada M, El-Ghazzawi, Talaat M and Elwany S. The human respiratory nasal mucosa in pregnancy. An electro microscopic and histochemical study. *J Laryngol Otol* 1982; 96(7): 613-26 (doi: 10.1017/s0022215100092902)
- Caparroz FA, Gregorio LL, Bongiovanni G, Izu SC and Kosugi EM. Rhinitis and Pregnancy. *Braz J Otorhinolaryngol* 2016; 82: 105-11.
- Ellegard E, Hellgren M, Toren K and Karisson G. The incidence of Pregnancy Rhinitis. *Gynecol Obstet Invest* 2000; 49: 98-101.
- Bhagat DR, Chowdhary A, Verma S and Jyotsana. Physiological changes in ENT during pregnancy. *Indian J Otolaryngol Head Neck Surg* 2006; 58:268-70. (doi. https://doi.org/10.1007/BF03050836)
- Frances J Kellie. *Cochrane Database Syst Rev*. 2017 Aug; 2017(8): Cd011653. (doi: 10.1002/14651858.CD011653.pub2)
- Sushan S, Sadan O, Lurie S, Evron S et al. Pregnancy associated Rhinitis. *Am J Perinatol* 2006; 23: 431-4. (DOI 10.1007/s11882-014-0458-0)
- Bende M and Gredmark T. Nasal stuffiness during pregnancy. *Laryngoscope* 1999; 109: 1108-10. (DOI: 10.1097/00005537-199907000-00018)
- Silkof PE, Robbins RA, Gaston B, Lundberg JON and Townlay RG. Endogenous nitric oxide in allergic airway disease. *J Allergy Clin Immunol* 2000; 105: 438-48. (DOI: 10.1067/mai.2000.1049380)
- Thompson AK, Juniper E and Meltzer EO. Quality of life in patients with allergic rhinitis. *Annals of Allergy Asthma and Immunology* 2000; 85(5): 338-47.
- Orban N, Maughan E and Bleach N. Pregnancy induces rhinitis. *Rhinology* 2013; 51:111-19 (DOI:10.4193/Rhino12.045)
- Pien GW and Schwab RJ. Sleep disorders during pregnancy. *Sleep* 2004; 27(7): 1405-17. (doi: 10.1093/sleep/27.7.1405)
- Ellegard E. Special considerations in the treatment of pregnancy rhinitis, *Women's Health (Lond England)*. 2005; 1(1): 105-14. (10.1517/17455057.1.1.105)