



PREGNANCY INDUCED RHINITIS: A SYSTEMIC REVIEW

***Dr. Kamlesh Dubey**

Assistant Professor, Department of ENT, Melaka-Manipal Medical College (MMMC), Manipal Academy of Higher Education (MAHE), Melaka, Malaysia.

***Corresponding Author: Dr. Kamlesh Dubey**

Assistant Professor, Department of ENT, Melaka-Manipal Medical College (MMMC), Manipal Academy of Higher Education (MAHE), Melaka, Malaysia. DOI: <https://doi.org/10.17605/OSF.IO/HTSMK>

Article Received on 23/10/2020

Article Revised on 12/11/2020

Article Accepted on 02/12/2020

ABSTRACT

Introduction: Importance of correct diagnosis of any pathological condition during pregnancy is well known now. Nasal complaints due to rhinitis are not rare during gestation. One of the important causes of nasal changes during pregnancy is associated with changes in blood level of estrogen and progesterone. These hormonal changes manifest with nasal symptoms like nasal obstruction and clinical examination findings like nasal congestion. Correct diagnosis of pregnancy induced rhinitis has immense importance considering health of both mother and growing foetus with respect a favourable pregnancy outcome. Author searched for research and studies done on rhinitis induced due to hormonal changes during pregnancy considering diagnosis, investigation and treatment involved with this diagnosis.

KEYWORDS: Pregnancy, hormonal changes during pregnancy, rhinitis, fetal health.

Pregnancy induced rhinitis: a systemic review

Definition of Pregnancy rhinitis

Defined as “nasal congestion present during the pregnancy and that last for 6 or more weeks of pregnancy without other signs of respiratory tract infection, and with no known allergic cause, disappearing completely within 2 weeks after delivery”.^[1]

Clinical importance of knowing about Pregnancy rhinitis

Rhinitis during pregnancy may develop due to many etiologies like infections, allergy, environmental, only when pregnant lady is developing symptoms and signs of rhinitis because of hormonal changes during gestational period pregnancy induced rhinitis or gestational rhinitis can be the diagnosis. Hormonal changes have been proposed in the pathophysiology of pregnancy rhinitis, but we are still lacking the definitive basis for the disease.^[2] Knowledge about pregnancy rhinitis is important because of associated complication of rhinitis on pregnancy and growing foetus, cause may be because of the complication of the disease or the medicines used in the management of the rhinitis. Studies have suggested that snoring and sleep apnoea syndrome associated with pregnancy rhinitis lead to serious undesirable complications to mother such as hypertension, preeclampsia and fetal complications lie intrauterine growth retardation, low APGAR score.^[6,7,8] There are associated adverse effects of medicines used in

management of pregnancy rhinitis. Pregnancy rhinitis affects the quality of life of during pregnancy and same time there is a risk to growing fetus. Pregnancy rhinitis increased risk of obstructive sleep apnoea syndrome, this expose fetus to prematurity and intrauterine growth retardation.^[12]

Incidence and Prevalence

Study from Turkey published in 2016 found prevalence of pregnancy rhinitis at 17.17% and cumulative incidence was 38.89%^[5], which is quite high incidence. This need further studies to understand clearly the definitive pathophysiology involved in pregnancy rhinitis. Polish study published in 2013 evaluated the prevalence of pregnancy rhinitis in West Pomerania province on 117 pregnant women from 2009-2010. Authors found 39% of pregnant women suffering from pregnancy rhinitis, majority of women in this study were diagnosed during 13th to 21st week of gestation.^[9] Malaysian study in 2013 found a prevalence of 53.3 %, most cases reported during third trimester.^[10] Study by Shushan S, et al in 2006 published in American journal of perinatology found incidence of rhinitis associated with pregnancy at the time of delivery as 9%.^[11]

What is the Etiology and Pathophysiology behind Pregnancy rhinitis

Earliest studies which related the nasal congestion with hormonal changes during the pregnancy first appeared in late nineteenth century. In 1943 Mohun coined the term vasomotor rhinitis of gestation which is earliest

description of pregnancy rhinitis. The cases reported by him developed nasal congestion symptoms from third to seventh month of gestation and nasal obstruction complaint usually got relieved by 10th days postpartum.^[20]

Our current knowledge about pathophysiology of pregnancy rhinitis still need further study. Study by Philpott CM, et published in 2004 found the confirmative effect of pregnancy on nasal Musca and it coincides with the rise of female sex hormones with gestational age and returning to normal postpartum. Authors found definitive evidence decrease in nasal patency by measurements which included measurements of the nasal airway with anterior rhinoscopy, peak inspiratory flow, acoustic rhinometry.^[15] Article published in Journal of Ear, Nose, Throat published in 2016 suggested similar finding in a study which included 20 non-smoking healthy pregnant women aged 19-35. Authors found statistically significant increase in anterior rhinoscopy (AnR) score through pregnancy decreasing in postpartum similar finding was observed during anterior rhinometry (ARM).^[16] Though pregnancy rhinitis is a common condition, recently studies are gaining importance after results showing direct association between snoring and obstructive sleep apnea (OSAS) during pregnancy which is indirectly influencing preeclampsia.^[21] Philpott CM, et all study reported nasal congestion with rise in estrogen level at the time of ovulation.^[22]

Risk factors for development of pregnancy rhinitis and Hormonal rhinitis

Ellegard EK, et all study in 2003 suggested smoking and sensitization to house dust mite as possible risk factors for pregnancy rhinitis. Ellegard E, et al studied sensitization to ten airborne allergens in 163 women out of which 83 had past report of pregnancy rhinitis. Authors found no difference on sensitization test between both group but found increased sensitization to house dust mites in pregnancy rhinitis group.^[25] Ohashi Y, et al study in perennial and seasonal rhinitis cases reported increase in soluble intercellular adhesion molecule (sICAM), similar study in group of 23 pregnancy rhinitis diagnosed women found no evidence of sICAM level in blood.^[27] There is a positive association between development of nasal congestion and body mass index (BMI) during certain gestational weeks, with unfavourable maternal and fetal outcomes of rhinitis developing due to hormonal changes which is associated with obesity and excessive weight gain during pregnancy.^[28]

Diagnosis of pregnancy rhinitis

Ellegard E and colleague published in 1999 article which laid the foundation for diagnosis of pregnancy rhinitis. Authors followed 23 women daily till one month after delivery by nasal congestion score and nasal peak expiratory flow rate was measured (nPEF). Study reported more congestion during pregnancy period then after delivery with excluding other causes of nasal

congestion including upper respiratory tract infection. Authors proposed following criteria in diagnosis of pregnancy rhinitis 1) nasal congestion present during at least last 6 weeks or more weeks of pregnancy, 2) No evidence of allergic disorder, 3) No evidence of respiratory tract infection, 4) symptoms disappearing within 2 weeks of postpartum period, additional complaints may or may not include watery or viscous, clear nasal secretion.^[30] Nasal endoscopy after adequate decongestion is diagnostic method of choice, in some cases ultrasound or x-ray may be required to see the changes in paranasal sinuses.^[32]

Management of Pregnancy rhinitis

Management of pregnancy is important for both pregnant women as well as growing fetus. Treatment options include both (A) Pharmacological and (B) Non-pharmacological methods of management. Any desired benefit from the medicine need to be compared with associated adverse effects to fetus. Mainstay of treatment in pregnancy rhinitis is based on symptomatic relief.^[4] Pharmacological options include 1) Decongestant: nasal and oral route, decongestant is double edge sword. Study by Rambur B found rhinitis medicamentosa exacerbating the nasal obstruction symptoms in pregnancy rhinitis after injudicious prolonged use.^[33] This rebound nasal obstruction or rhinitis medicamentosa can be prevented by avoiding use of nasal decongestant beyond 3 days.^[34] Other than risk of rhinitis medicamentosa with prolonged use of nasal decongestant, there is report of association of vasoconstrictive exposures with risks of gastroschisis and small intestinal atresia. 2) Use of steroids in management of pregnancy rhinitis: there are few studies on use of nasal steroid in pregnancy rhinitis one study published in October 2001 edition in journal of Clinical Otolaryngology and Allied Sciences, authors used fluticasone nasal in 53 diagnosed pregnancy rhinitis women and followed for 8 weeks. Patients were followed daily with nasal symptoms score along with nasal peak expiratory flowmeter and acoustic rhinometry before and after treatment with fluticasone nasal spray. Study didn't find any significant effects on comparing with placebo also there was no detectable change in maternal cortisol level which was measured morning S-cortisol.^[36] (B) Non-pharmacological treatment: (1) Counselling: this is most important, women with pregnancy rhinitis need to be told regarding the cause, nature and problem associated with the disease. Staff managing the antenatal clinic also should have basic idea about pregnancy rhinitis so that unnecessary anxiety during clinic visit.^[33] (2) Physical exercise: exercise effects on nose are well documented, vasoconstriction of capacitance vessels leads to measurable increase in nasal volume and improved in symptoms.^[37] Exercise have additional effect on sleep disturbance, normal fatigue and exercise associated wellbeing help the woman to sleep.^[38] (3) Raise the head end of bed: interesting study of year 1979 by Japanese researchers found remarkable changes in nasal symptom score and postural nasal resistance in patients with diagnosed rhinitis.^[41] Raising the head end

sufficiently improve nasal symptoms as reported by studies, angle of elevation found useful for patients include 30° and 45°.^[39,40] (4) Mechanical devices: include a) external nasal strip and b) intranasal mechanical dilator. One of the earliest studies on use of intranasal mechanical dilator use for relief of congestion complaint and published in journal *Chest* in 1998 by Lorino and colleague concluded intranasal mechanical dilator as effective treatment to improve nasal breathing as effective as nasal decongestant.^[42] (5) Nasal saline irrigation: Nasal irrigation with saline also known as nasal douching, washing or lavage, is a procedure of cleaning the nasal cavity with isotonic or hypertonic saline solutions.^[44] Chinese study of 2017 in 101 patients found superior effect of nasal 3% saline wash comparing with nasal steroid spray.^[45] Nasal saline has additional benefit in form of mild vasoconstrictor. Women with pregnancy rhinitis can prepare saline solution easily in home, so this is a cheap and affordable method with no significant side effects report.

CONCLUSION

Pregnancy rhinitis or gestational rhinitis diagnosis and management is important from both maternal and fetal health. Studies have shown increasing report of pregnancy rhinitis and relation body mass index, smoking, and exposure to house dust mites and gestational week. Treatment is mainly symptomatic to relieve the nasal congestion and obstruction complaints. Counselling of women with diagnosis of pregnancy rhinitis is important, antenatal clinic staff should have basic idea on how to diagnose and manage pregnancy rhinitis or gestational rhinitis so that unnecessary exposure to medicines and treatment forms avoided.

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