Otorhinolaryngological Manifestations in Pregnancy

Ahmed.A.AL-Zubiadi* (FIBMS)

الخلاصة: يعد اختصاص طب وجراحة الأنف والأذن والحنجرة من الاختصاصات التي تتعامل مع عدد كبير من المرضى في العيادة الخارجية ومن كافة الأعمار ومن كلا الجنسين.وتعتبر المرأة الحامل ذات طبيعة خاصة يجب أخذها بالحسبان من قبل طبيب الأنف والأذن والحنجرة و ذلك للتغيرات التي تطرأ على المرأة وجنينها وارتباط بعض هذه التغيرات بأمراض الأنف والأذن والحنجرة

الهدف من الدراسة: تقييم أمراض الأنف والأذن والحنجرة التي تحدث خلال فترة الحمل وبيان ارتباط بعضها بالتغييرات الفسلجية التي ترافق الحمل وتؤدي إلى أن تصبح هذه الأمراض أكثر شيوعا في فترة الحمل.

المرضى والطرق: دراسة الحالات والشواهد ل١٥٥ امرأة تم تقسيمهن إلى مجموعتين، الأولى تألفت من ٦٩ امرأة حامل ومثلت هذه المجموعة مجموعة الاختبار بينما تألفت مجموعة السيطرة من ٨٥ امرأة من غير الحوامل وجميعهن قد تم أجراء الفحص السريري عليهن سواء في العيادة الاستشارية لإمراض الأنف والأذن والحنجرة في مستشفى الصدر التعليمي في النجف أو العيادة الخاصة للباحث للفترة من أيار ٢٠٠٩ ولغاية شباط ٢٠١١.

تم استخدام برنامج SPSS لأجراء التحليل الإحصائي للنتائج المستخلصة.

النتائج:معدل أعمار النساء الحوامل في هذه الدراسة كان ٢٧,٤٩ بينما كان معدل الأعمار للنساء في مجموعة السيطرة (غير الحوامل) ٢٦,٦٩ . أكثر أمراض الأنف والأذن والحنجرة شيوعا في فترة الحمل كان التهاب الأذن الخارجية (٣٠,٣%) تلاه التهاب الأغشية المخاطية التحسسي (٢٠.٧%) وأقلها شيوعا التهاب الغدة اللعابية النكفية والصمم الحسي العصبي وتمزق طبلة الأذن نتيجة شدة خارجية.

حدث أكثر حالات التهاب الأذن الخارجية في الأشهر الثلاثة الأخيرة من الحمل.

الاستنتاجات: أمراض الأنف والأذن والحنجرة تعتبر شائعة أثناء الحمل ومعظمها تختفي أو تتحسن بعد الولادة لذا يكون العلاج التحفظي مفضلا على غيره من الأساليب العلاجية الأخرى لتقليل الخطورة على الأم والجنين.

Abstract :

The otorhinolaryngology deal with a large number of out patient problems that affect all age group and both sex. The pregnant woman should take special consideration due to changes that affect both the mother and her fetus and the relation between these changes and ENT problems.

Aim of the study: to study the prevalence of Otolaryngological diseases that occur during pregnancy and relation between physiological changes that occurs during conception and these diseases.

Patients and methods :a case control study of 155 women divided into two group , the first group consist of 69 pregnant women and the control group (85 non pregnant women . These females were examined in the otolaryngology outpatient clinic in Alsadar teaching hospital and the private clinic of the researcher over a period from May 2009 till February 2011 . Statistical analysis was done by using SPSS(statistical package for social science), version 11. In which chi square (x^2) test was used to compute significance.

Results : The mean age of group I (pregnant) was 27.49 while the mean age of control group was 26. 69. The most common otolaryngological problem in women in group I was otitis externa which occur in 30,4%, followed by allergic rhinitis which occurred in 21,7%. While the least common causes were parotitis, sensorineural deafness and traumatic rupture of tympanic membrane. Another interesting result is the occurrence of otitis externa more frequently in the last three months of pregnancy of women included in this study.

Conclusion : ENT related symptoms are common during pregnancy; most of them should be treated conservatively as they disappear after birth. Otitis externa appear to be more common in pregnancy because of changes in the skin of external ear canal under hormonal influence which make the environment in the canal resembles other predisposing factor

Key words:otorhinolaryngology,manifestation ,pregnancy.

***Kufa university/college of medicine/department of surgery/otolaryngology**
Correspondence : ahmedam@med.kuiraq.com

Introduction:

The specialty of ear, nose and throat stands at cross-roads with several other specialties and subspecialties such as neurology, neurosurgery, oncologic surgery, gastroenterology, ophthalmology, pediatrics, plastic and reconstructive surgery, respiratory medicine, critical care, allergy and immunology. Unfortunately the relation between obstetric and otolaryngology was not unusually to be neglected or underestimated.

A considerable number of changes occur throughout the body in the pregnant female. While most of these produce no harm to the expectant mother or fetus, some can become pathological. Any organ in the body can become affected by hormonal and physiological adjustments that take place during this period, and the ear, nose and throat (ENT) is not an exception.

The pregnant women faces a challenging period which may be made more stressful by developing ENT related symptoms .Although most symptoms are minor and transient , it is important that otolaryngologist recognize the potential influences that pregnancy can exhibit in order to manage and reassure the patient .

Literature review:

Physiological changes during pregnancy:

The physiological changes in pregnancy are strongly protective. Most of these changes are qualitative in the first trimester and only become mature later[1].

Pregnancy and nose:

Rhinitis:

Rhinitis during pregnancy is well-known entity, affecting 22% of pregnant women.This proportion increases to 69% in those who smoke. The prevalent nasal symptoms are rhinorrhoea and nasal congestion.during pregnancy. Vascular changes and physiological expansion of circulating blood volume may contribute to increase nasal vascular pooling and progesterone induced vascular smooth muscle relaxation. The severity of rhinitis has been shown to be parallel to estrogen level during pregnancy. Direct nasal effect from changes in the level ofestrogen, progesterone,prolactin and placental growth hormone are thus possible cause in development of this condition[2].

Conservative management is appropriate in majority of pregnant women with rhinorrhoea.

Epistaxis :

Epistaxis is common during pregnancy and may occur in up to 20 % of pregnant women[3]. Causes may be due to increased vascularity of nasal mucosa as result of hormonal changes. Other possible causes like granuloma gravidarum and nasal haemengioma are not uncommonly reported[4.]

Pregnancy and the ear:

Hearing loss:

Sudden onset of sensorineural hearing loss during pregnancy has been described in a case report[5] .A perilymph fistula secondary to a fracture of the stapes footplate occurring at the time of exertion of parturition lead to sudden onset of high frequency SNHL, has also been described in a case report[6].

Otosclerosis is one of the most common causes of acquired hearing loss in western countries and is widely accepted as being related to pregnancy[7]. Since 1930 the onset of

otosclerosis was linked with advice to the patients ranging from termination of pregnancy and sterilization to delay surgical interference until their families are complete[8]. However, since 1974 an increasing number of studies dismissed the relation between otosclerosis and pregnancy as being coincidental[8,9].It is now considered that otosclerosis is simply more prevalent in women of childbearing age and there is no direct effect of pregnancy on hearing.

The changes in estrogen and progesterone level have been postulated as an influence on the hearing mechanism due to alteration in sensory nervous system[10].

The hypercoagulable state, which can occur during normal pregnancy, can lead to vascular occlusion of microcirculation of the inner ear leading to sudden onset of deafness[11].

Tinnitus:

Is the more common audiological complaint during pregnancy with proposed theories including hyperdynamic circulation, increase in perilymphatic fluid pressure and hormonal changes[12]. More significantly, tinnitus considered as an early warning sign of preeclampsia[13].

Neurological:

Several reports have suggested increase in incidence of Bell's palsy during pregnancy[14].Prognosis for full recovery is poorer in pregnant women than non pregnant women but this may be to the avoidance of drug use in pregnant women.

Most cases of facial palsy occur in third trimester. This may be suppression of herpes simplex virus reactivation in early pregnancy and increase susceptibility to infection and reactivation in late pregnancy[15] .

Balance:

Vertigo and dizziness are frequently experienced during pregnancy and are among the most common complaint from pregnant women to primary care.These patients are rarely referred to ENT department as most cases are related to non-vestibular causes[16].

The nausea and the vomiting associated with pregnancy may be precipitated or influenced by the hormonal or fluid-volume changes occurring in the vestibular system; however evidence for this is currently observational[16].

The course of Menier's disease during pregnancy is poorly reported in the literature, but it has been shown to be exacerbated during the late leuteal phase of the menstrual cycle[17]. So it may have some association with hormonal changes which cause fluid retention.

A physiological reduction in serum osmolality may affect the vestibular system via changes in the perilymph and therefore lead to an exacerbation of symptoms during pregnancy[18] although the evidence support this is limited.

Postpartum vertigo is associated with multiple causes most of them are non otological , some case reports suggest the abrupt changes in middle ear and intracranial pressure ,secondary to valsalva maneuver during labor can lead to trauma to vestibular system including perilymph fistula formation [19] and superior semicircular canal dehiscence [20.]

External canal:

Granuloma gravidarum or pregnancy tumor, describe pyogenic granuloma occurring in the prenatal period. These benign lesions can occur up to 5% of pregnancies [21]. And can occur more frequently in the second and third trimester. The pathogenesis of this lesion may be hormone mediated with the dilation and proliferation of blood vessels. While the sites of predilection tend to be the oral cavity, cases exist of granuloma gravidarum[22].

Pregnancy and the throat:

Dysphonia :

Disturbance in the quality of the voice is uncommon complaint among pregnant women. In fact, due to the perfect lubrication of the vocal cords, a better quality of voice can occur in the first and second trimesters, with professional singers being able to sing well until 7 months[23]. When dysphonia does occur, a number of etiological factors are thought to influence the voice during pregnancy, including altered breathing support, nasal obstruction and laryngopharyngeal reflex.

Few cases reports have been published regarding laryngopathia gravidarum , which relate to transient change in laryngeal mucosa [24,25] and is considered hormonal changes of larynx resulting in edema . In some cases, it may be associated with preeclampsia[25]. Other causes of laryngeal edema in pregnancy include raised venous hypertension, fluid overload, weight gain and pregnancy aggravated hypertension[26].

Reflux:

Gastroesophageal reflux is thought to occur in approximately 30%-50% of pregnancies, with the causative factor predominantly being a decrease in the lower esophageal sphincter pressure secondary to influence of progesterone[27].

Patients and methods:

A case- control study of total of 155 women including 69 pregnant (test group) and 86 non pregnant (control group). These females were examined in the otolaryngology outpatient clinic in Alsadar teaching hospital and the private clinic of the researcher over a period from May 2009 till February 2011 .

Statistical analysis was done by using SPSS(statistical package for social science), version 11. In which chi square (x^2) test was used to compute significance.

P – Value < 0.05 regarded as significant.

The results:

A total of 155 women divided into two groups,

Group I :69 pregnant women(study group)

Group II: 86 non pregnant women (control group).

The mean age of group I was 27.49

The mean age of group II was 26. 69.

Table (1) Age distribution in Group Iand Group II

	Minimum	Maximum	Mean	Std.Deviation
Age of women in groupI (pregnant)	20	38	27,49	4,368
Age of women In group II (control)	20	35	26,69	4,120

The most common otolaryngological problem in women in group I was otitis externa which occur in 30,4%, followed by allergic rhinitis which occurred in 21,7%.While the least common causes were parotitis, sensorineural deafness and traumatic rupture of tympanic membrane. Each one of these three diseases represent 1.4 % of pregnant women included in this study.

Table (2) Different Otolaryngological problems that diagnosed in group I

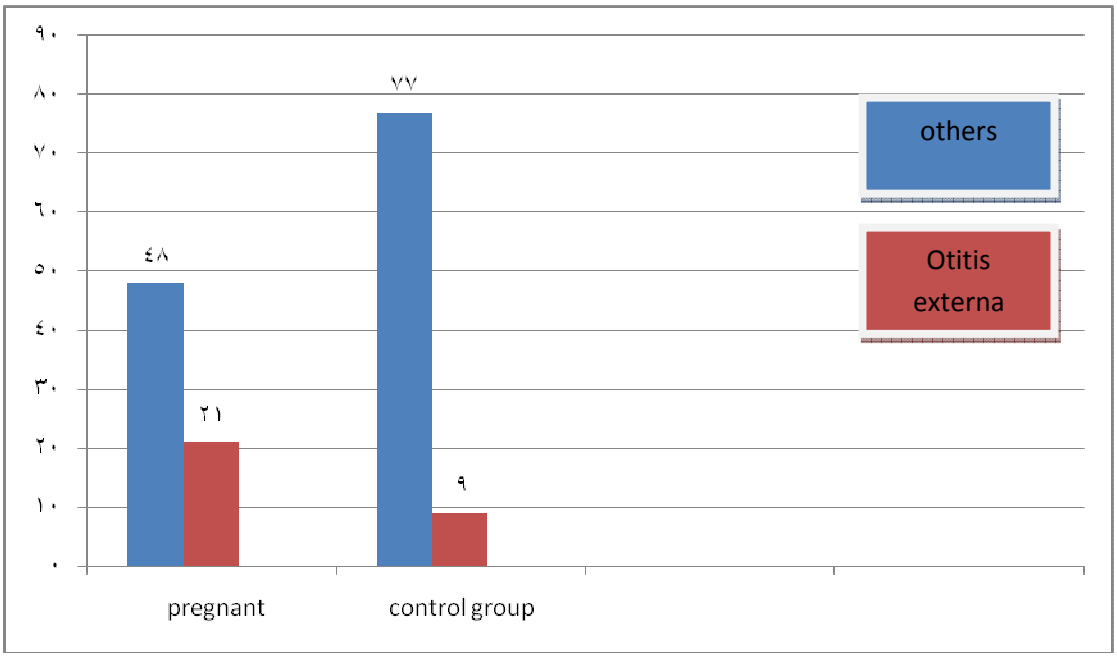
Diagnosis	Frequency	Percent	Valid percent	Cumulative percent
Acute suppurative otitis media(ASOM)	7	10.1	10.1	10.1
Acute laryngitis	3	4.3	4.3	14.5
Acute pharyngitis	5	7.2	7.2	21.7
Acute sinusitis	4	5.8	5.8	27.5
Acute tonsillitis	4	5.8	5.8	33.3
Allergic rhinitis	15	21.7	21.7	55.1
Chronic rhinosinusitis	2	2.9	2.9	58.0
epistaxis	2	2.9	2.9	60.9
Otitis externa(OE)	21	30.4	30.4	91.3
Otitis media with effusion (OME)	3	4.3	4.3	95.7
parotitis	1	1.4	1.4	97.1
Sensorineural deafness(SND)	1	1.4	1.4	98.6
Traumatic perforation of tympanic membrane	1	1.4	1.4	100
total	**69**	**100.0**	**100.0**	

Otitis externa appeared to be the most frequent disease that is encountered in group I (pregnant women). It affects 21 patients from total of 69 in study group. While occurred in only 9 of 86 non pregnant in control group.
The p value for occurrence of otitis externa during pregnancy was P=0.002.

Table (3) Number of patients with otitis extena in the two groups in this study

Count

		TYPE OF DISEASE		
		OTITIS EXTERNA	OTHERS	Total
STATUS	PREGNANT	21	48	69
	NON PREGNANT (CONTROL)	9	77	86
Total		30	125	155



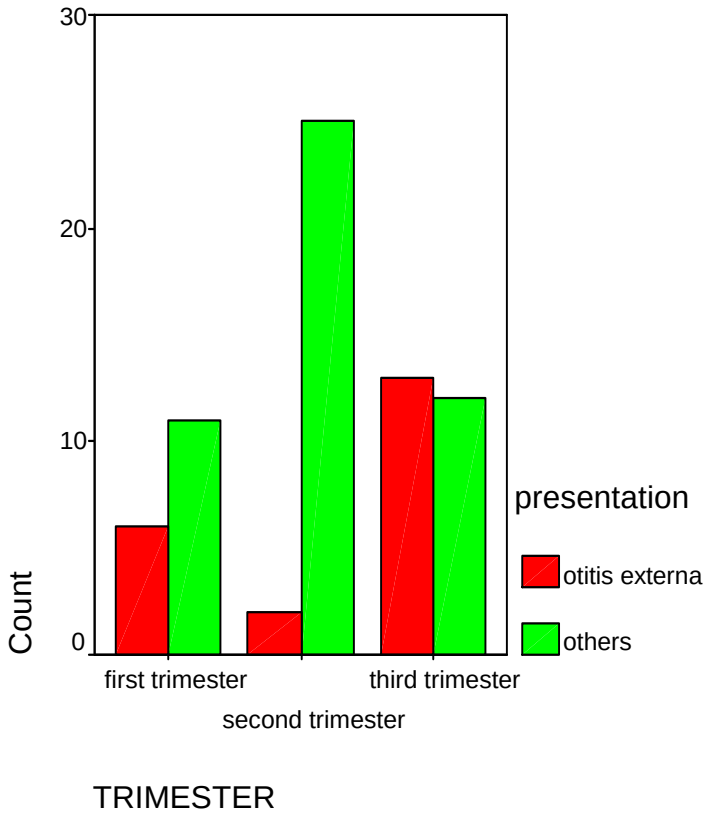
Fig(1)
Showing the number of otitis externa cases in comparison to the number of other diagnoses in two groups involved in this study

Another interesting result is the occurrence of otitis externa more frequently in the last three months of pregnancy of women included in this study.
The P value for this was 0.002

Table (4) The distribution of otitis externa among the three trimesters of pregnancy

Count

		presentation		
		otitis externa	others	Total
TRIMESTER	first trimester	6	11	17
	second trimester	2	25	27
	third trimester	13	12	25
Total		21	48	69



Fig(2)

The distribution of otitis externa among the three trimesters of pregnancy

Discussion :

The mean age of tested group was 27.49 and this is usual age of conception.

We will try to discuss the most common manifestations of each one of the three subdivisions of otorhinolaryngology separately.

Regarding otological problem in this study, the most significant one was otitis externa which is encountered in pregnant women in the study group in 30.4 .

The p value for occurrence of otitis externa during pregnancy was P=0.002, and this show strong significance of this observation.

This may be a part of changes that affect skin in general during pregnancy.

Eccrine activity may be noticeably increased during pregnancy [28].

Although there is considerable individual variation, the rate of sebum production increased during pregnancy and return to normal after delivery[28]. The wet external auditory canal with the overproduction of sebum are well-known predisposing factors for otitis externa . Unfortunately no published paper in the midline or internet linked the relation between pregnancy and otitis externa .

Otitis externa in pregnancy occure mainly in the third trimester, and this may be due to the rise in the sebum excretion during the last trimester of pregnancy, at a time when estrogen , which suppress sebum secretion is being produced in a large quantities. The sebum excretion rate in women with twins or triplet is no greater than women with

single featus, suggesting that sebatrophic factor come from pituitary gland rather than placenta[28].

Other otological problem appear to be insignificant in this study like sensorineural deafness which occur in only 1.4 % and this look similar to what mentioned in literature which is mention only a few case reports [5,6].

We did not even record one case of otosclerosis in our study,and this look quite different from Markou K et al work who considered pregnancy as one of association with otosclerosis and referred to the role of hormonal factors which may play a role in flaring up of the symptoms of this disease[7]. It is valuable to mention that otosclerosis is not so common in our country as compared to Europe.

But Lippy WH reach to conclusion that (there is no adverse effect on hearing in otosclerosis during pregnancy [8].

From three rhinological problems recorded in study group,allergic rhinitis appears to be the commonest one and occupy the second place among the most common otolaryngological problems during pregnancy (21.7% of women in group I.)

Ellgard and karisson have demonstrated an increase in IgE level against house dust mite during pregnancy [29].

Epistaxis ocuured in only two cases in our study and show no siginifcant observation (2.9), both of these cases were mild and stopped spontinously with simple measures. This result may be changed if the sample was larger.

This low percentage differs from Dugan Kim finding who considered epistaxis as one of the common nasal events during pregnancy and occur up to 20 % of pregnant women as compared of 6% in non pregnant[3] .

Regarding throat mainfastation no one of the four diseases that appeared in this study reach the significant level. The work of Slaviskii AN who stated that" women of child bearing age with recurrent decompensated or chronic pharyngotonsillitis should be regarded as being at high risk of endocrine infertility" [30]may explain the paucity of cases of tonsillitis and pharyngitis among our group of pregnant women.

Laryngitis was a rare cause for the pregnant women to visit ENT office in our study (4.3%) and this may be due to general improvement in the function of larynx during the first and second trimester due to good lubrication[23.]

Surprisingly no single case of GERD is reported in the study group which is very different from Ramu B, etal result who found GERD prevalence was high in pregnancy .The absence of such finding makes the need of a larger sample and longer duration in further and future study to decrease bias. Also the Lack of standard criteria for diagnosis of GERD may underdiagnose it.

Conclusions:

ENT related symptoms are common during pregnancy; most of them should be treated conservatively as they disappear post partum. So the avoidance of unnecessary treatment can reduce the risk to the fetus.

This relation should kept in the mind of gynecologist an general practionar in addition to the otolaryngologist .

Otitis externa appear to be more common in pregnancy because of changes in the skin of external ear canal under hormonal influence which make the environment in the canal resemble other predisposing factor (wet and waxy)

Recommendations:

Very little data available to compare with our result represent the most important limitation in this study. So we recommend further studies with larger sample to reduce bias that appear in this study.

References :

1. Fiona Broughton –Pipkin ,maternal physiology. In Keith Edmonds, Dewhurst textbook of obstetric and gynecology , seventh . Blackwell publishing 2007/16.
2. Stephanie A. Joe, Nonallergic rhinitis. In Flint, Cumming otolaryngology head and neck surgery Volume one, Fifth edition Mosby elsever 2010/969.
3. Dugan – Kim M, Connell S, Satika C, Wong CA, Gossett DR. Epistaxis of pregnancy and association with postpartum hemorrhage. Obstet Gynecol, 2009;114(6):1322-1325.
4. Bhagat DR, Chowdhary A , Verma S , Jyotsana. Physiological changes in ENT during pregnancy. Ind J Otolaryngo. 2006 ;58 (3): 3.
5. Kenny R, Patil N, Considine N. Sudden (reversible) sensorineural hearing loss in pregnancy. Ir J Med Sci. 2011;180(1): 79-84.
6. Whitehead E. Sudden sensorineural hearing loss with fracture of the stapes footplate following sneezing and parturition . Clin Otolaryngol Allied Sci. 1999;24 (5):462-464.
7. Markou K, Goudakos J . An overview of the etiology of otosclerosis . Eur Arch otorhinolaryngol. 2009;266(1):25-35.
8. Lippy WH, Berenholz LP, Schuring AG, Burkey JM. Does pregnancy affect otosclerosis ? Laryngoscope . 2005 ;115(10):1833-1836.
9. Hall JG. Otosclerosis in Norway , ageographical and genitical study. Acta otolaryngol suppl. 1974 ; 324, 1-20.
10. Bakar MA, Weiller EM. Sex of listener and hormonal correlate with auditory thresholds. Br J Audiol. 1977, 11(3):65-68.
11. Kanadys WM, Oleszczuk J. sudden sensorineural hearing loss during pregnancy. Ginekol Pol. 2005;76(3):225-227.
12. Preece PE, Richards AR,Owen GM, Hughes LE. Mastalgia and total body water. Br Med J. 1975:4(5995):498-500.
13. Shapiro JL, Yudin MH, Ray JG. Bills palsy and tiintus during pregnancy: predictors of pre-eclampsia? Three cases and detailed review of the literature. Acta Otolaryngol. 1999; 119(6):647-651.
14. Holland NJ, Weiner GM. Recent developme.BMJ 2004; 329(7465); 553-557.
15. Varbec JT,Isaacson B, Van Hook JW. Bell's palsy and pregnancy. Otolaryngol Head Neck Surg.2007;137(6):858-861.
16. Black FO. Maternal susceptibility to nausea and vomiting of pregnancy :is the vestibular system involved? Am J Obstet Gynecol.2002;186(5 suppl):s204-s209.
17. Andrews JC, Ator GA, Honrubia V.The exacerbation of symptoms in Menier,s disease during premenstrual period. Arch Otolaryngol Head Neck Surg.1992;118(1):74-78.
18. Uchide K, Suzuki N, Takiguchi T, Terad S, Inoue m. The possible effect of pregnancy on menier,s disease. ORL J Otolaryngol Relate Spec.1997;59(5):292-295.
19. Gleeson SE, Williams DM. Perilymph Fistula: rare but real. Can Fam Physician.1989;35:803-805.

20. Walters KF, Rosowski JJ, Sauter, Lee DJ.Superior semicircular dehiscence presenting as postpartum vertigo.Oto Neurootol.2006 ;27(6):756-768.
21. Sills ES, Zegarilli DJ, Hoschander MM,Strider WE. Clinical diagnosis and management of hormonally responsive oral pregnancy tumor(pyogenic granuloma). J Reprod Med.1996;41(7):467-470.
22. Courney MJ ,Koleda CB, Tithhener G. Aural granuloma gravidarum. Otolaryngol Head Neck Surg.2003;129(1):149-151.
23. Hamdan AL,Mahfoud L,Sibai A. Seoud M. Effect of pregnancy on the speaking voice. J Voice.2009;23(4):490-493.
24. Bhatia PL, Singh MS, Jha BK. Laryngopathia gravidarum. Ear Nose Throut J,1981;60(9):408-412.
25. Hoing R Seitzer D. Clinical aspect of laryngopathia gravidarum.Laryngol Rhinol Otol (Stuttg).1988;67(11):564-566.
26. Brimacombe J. Acute pharyngolaryngeal oedema and pre-eclamptic toxeaemia. Anaesth Intensive care. 1992;20(1):97-98.
27. Richter JE. Gastroesophageal reflux disease during pregnancy. Gastroenterol Clin North Am.2003;32(1):235-261.
28. G.W.M. Millington, R.A.C. Graham-Brown, skin and skin diseases throughout life. In Tony Burns , Rook,s textbook of dermatology, in volume one eighth edition, Wiley-Blackwell 2010/8.10.
29. Ellegard EK, Karisson G. IgE mediated reactions and hyperactivity in pregnancy rhinitis. Arch otolaryngol Head Neck Surg.1999;125(10):1121-1125.
30. Slaviskii AN. The role of chronic tonsillitis in the development of reproductive pathology in women of child –bearing age.Vesten Otorinolaringol.2009;(4):40-4.
31. Ramu B, Mohan P, Rajasekaran MS, Jayanthi V. Indian J Gastrenterol 2011 May ;30(3):144-7.