Rhinologic issues in pregnancy

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ABSTRACT

The diagnosis and treatment of rhinitis, sinusitis, and epistaxis during pregnancy present unique challenges to the otolaryngologist. Poorly controlled sinonasal disease may have significant adverse effects on the mother's quality of life and pregnancy outcomes and the lack of adequately controlled safety data limits the clinician's ability to make informed decisions about management. At the conclusion of this discussion, the reader should be familiar with the available literature and evidence-based guidelines regarding the safety and indications for radiographic imaging, clinical testing, medical intervention, and surgical treatment of sinonasal disease in pregnant patients. A review was performed of pertinent guidelines regarding the management of gestational rhinitis, sinusitis, and epistaxis, including the diagnostic and therapeutic limitations and physiological changes specific to pregnancy. A study population of four patients was analyzed to highlight the steps of management by reviewing the patient charts including pertinent history, physical examination, clinical course, and operative reports. Two patients with epistaxis and two patients with rhinosinusitis ranging from 27 to 38 years of age and between 16 and 35 weeks gestation were analyzed. The treatment of sinonasal disease during pregnancy is challenging and a thorough knowledge of the available medical evidence and treatment guidelines is necessary to optimize pregnancy outcomes. When the severity of disease precludes the possibility of delaying treatment, the clinician should provide a limited intervention that optimizes the mother's health without placing the fetus at significant risk.

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Many patients are reluctant to treat sinonasal disease during pregnancy and the otolaryngologist must be knowledgeable of all medical evidence and guidelines that are available. A review of gestational rhinitis, sinusitis, and epistaxis will be discussed, including the diagnostic and therapeutic limitations and physiological changes specific to pregnancy. A study population of four patients will also be discussed to highlight the steps of management.

Physiological changes during pregnancy account for a distinct condition known as "rhinitis of pregnancy," as well as an increased incidence of epistaxis and worsened underlying sinonasal disease.[1] During the first and second trimester, there is increased circulating blood volume that is mostly contained within plasma volume and shifts to the extravascular space by the third trimester. Estrogen also has a direct cholinergic effect on nasal mucosa, causing vascular engorgement and increased mucosal gland activity, thereby causing or amplifying a preexisting sinonasal condition that usually resolves within 5 days postpartum.[2,3]

Approximately 20–40% of women in their childbearing years report symptoms of rhinitis and sinonasal disease and 10–30% of these patients experience worsened symptoms during pregnancy.[2] The most common causes of sinonasal disease requiring medical attention during pregnancy include allergic rhinitis, bacterial sinusitis, and "rhinitis of pregnancy."[4] There is also an increased incidence of rhinitis medicamentosa during pregnancy because mothers are inclined to abuse topical nasal decongestants that they believe entail a lower risk to the fetus than oral medications.[5]

CASE SERIES

A study population of four patients was reviewed regarding the management of epistaxis and rhinosinusitis during pregnancy. Two patients with epistaxis and two with sinusitis were reviewed. The first patient was a 38-year old woman at 17 weeks gestation with twins and a recurrent arterial bleed from a branch of the sphenopalatine artery lateral to the inferior turbinate that failed conservative measures including anterior and posterior nasal packing. Because of the unknown risk of i.v. iodinated contrast to the fetus during endovascular embolization, the patient was treated with endoscopic cauterization under general anesthesia. Although endoscopic cauterization under local anesthesia is another treatment option, the severity of this patient's bleeding required general anesthesia and the obstetrics team followed the patient perioperatively with serial fetal ultrasounds to ensure the safety of the

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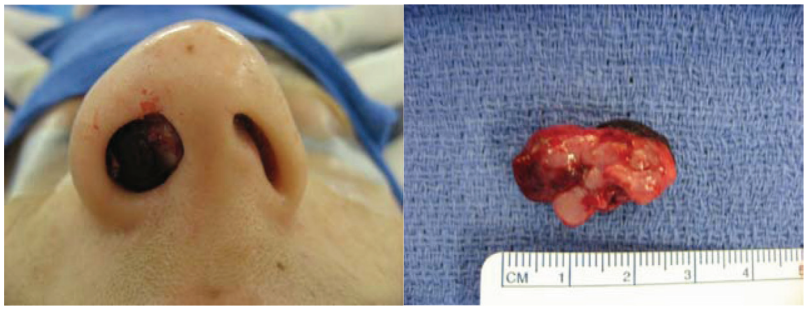

Figure 1. *Pyogenic granuloma pedicled on the dorsal septum with a wide-based attachment. The lesion was managed conservatively and surgically excised after delivery.*

twins. The second patient was a 35-year old woman at 35 weeks gestation with a pyogenic granuloma attached to the anterior septum and recurrent bleeding. Although pyogenic granulomas typically resolve spontaneously 1–2 months postpartum, surgical excision is sometimes necessary if these lesions persist.[6] This patient was managed conservatively until delivery and underwent endoscopic excision and cauterization during the immediate postpartum period (see Fig. 1).

The two patients with sinusitis were 27 and 30 years old and 19 and 23 weeks gestation, respectively. They each presented with a history of asthma and allergic rhinitis and worsening sinusitis symptoms during pregnancy. They were managed conservatively with antibiotic regimens that included amoxicillin, amoxicillin-clavulanate, and azithromycin as well as fluticasone, montelukast, fluticasone propionate/salmeterol, albuterol, and prednisone for asthma exacerbations. Because of symptom improvement no radiographic imaging was required during pregnancy and transillumination of the frontal sinuses showed no opacification.

DISCUSSION

The management of sinonasal disease during pregnancy requires a thorough discussion with the patient regarding the benefit–risk ratio of each intervention. Therefore, it is important that the otolaryngologist be familiar with the safety and indications for performing radiographic imaging and clinical testing as well as medical and surgical interventions in these patients.

Radiological testing for sinonasal disease should be performed with great caution after conservative treatment measures have failed and is generally contraindicated during the first trimester. The 10- to 17-week gestation period, in particular, is the most sensitive time period for fetal central nervous system development and, if possible, radiation exposure should be avoided during this stage of development.[7] However, the accepted maximum cumulative dose of ionizing radiation during pregnancy is 5 rads and no single diagnostic study exceeds this maximum.[8] When sinusitis is suspected and a therapeutic trial of antibiotics has failed leading to worsening symptoms, a confirmatory radiological study is often necessary to rule out or prevent intracranial and orbital complications. An MRI of the paranasal sinuses may be considered to prevent radiation exposure to the fetus but has the following limitations: it is most useful with i.v. contrast, which may be harmful for the fetus; it is more difficult to obtain; and it will not assist in preoperative planning. Therefore, the importance of CT imaging without i.v. contrast should be discussed with the patient, including the known risks of exposure to the fetus as well as the limited knowledge regarding the severity of these risks.

In the management of epistaxis, fluoroscopic examination of the head and neck exposes the fetus to <0.0005 rads, and lead provides added protection when placed over the abdomen and pelvis.[8] The American College of Radiology, however, states that it is not possible to draw a definite conclusion on the risks of intravascular iodinated contrast on the fetus, including the risk of contrast-induced neonatal hypothyroidism. Therefore, it should only be used if absolutely necessary and with informed consent.

Since 1980, the Food and Drug Administration Pregnancy Risk Categories have provided a guideline for physicians to prescribe medications with acceptable risk to the fetus. No sinonasal medications have undergone adequately controlled human studies to meet category A criteria, but it is generally acceptable to prescribe category B medications that are presumed to be safe based on animal studies.[9] Category C and D medications, however, should be used sparingly because of adverse effects shown in animals or humans (Tables 1–3 show the risk categories for antimicrobials, antihistamines, intranasal decongestants, and steroids).[10]

Oral steroids and decongestants are all category C medications and should be avoided at least during the first trimester.[11] Topical intranasal sprays have minimal systemic absorption and pose a relatively small risk to the fetus, but all are considered category C except for budesonide. Also, allergy skin testing is contraindicated during pregnancy because of the risk of anaphylaxis, but immunotherapy that was initiated

Table 1 **Antimicrobials**

Category B	Categories C and D
Penicillins (including sulbactam/clavulanate)	Clarithromycin
Cephalosporins	Fluoroquinolones
Clindamycin, erythromycin, and azithromycin	Aminoglycosides
	Sulfonamides
	Tetracycline
	Vancomycin

Table 2 **Anithistamines**

Category B	Categories C and D
Chlorpheniramine	Brompheniramine
Loratadine	Fexofenadine
Cetirizine	

Table 3 **Intranasal steroids and decongestants**

Category B	Category C
Budesonide	Mometasone
	Beclomethasone
	Fluticasone/flunisolide
	Decongestants: neo-synephrine and oxymetazoline

before pregnancy can be continued at a lower maintenance dose.[12]

Surgery should be considered a last resort once other treatment modalities have failed. Some studies have shown an increased rate of preterm labor after general anesthesia during the first two trimesters, and the effect of inhaled and i.v. anesthetics and narcotics on the fetus is not completely understood.[13]

CONCLUSION

The treatment of epistaxis and sinonasal disease during pregnancy should provide maximal therapeutic benefit and minimal risk to the mother and fetus. Once conservative measures have failed lower risk medications should be prescribed at the lower end of the therapeutic range and adjusted as necessary. Radiological testing should be performed after 17 weeks gestation once multiple medication regimens have failed and surgery should always be considered a last resort. Of utmost importance is an open discussion with the pregnant patient regarding the available literature and evidence-based guidelines to determine the indications for each intervention and to receive their informed consent.

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