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PREGNANCY RHINITIS: NEW LINKS OF PATHOGENESIS

Summary

The article presents the results of a study in which it was shown that in patients with pregnancy rhinitis nasal breathing dysfunction had appeared as a result of a steroid dysfunction, and may be the first manifestation of a pregnancy interruption and and fetus development abnormalities. The disorders of the blood coagulation system (increased level of fibrin) indicate the need for a detailed investigation of this group of women, taking into account the probability of development of thrombophilic pregnancy complications.

Keywords

Pregnancy rhinitis, hyperestrogenism.

Pregnancy rhinitis refers to the uncomfortable condition of severe nasal congestion – a stuffy nose – that troubles many women during pregnancy. It may affect more than 30% of women during pregnancy [2, 3, 10].

Pregnancy rhinitis is defined as nasal congestion in the last 6 or more weeks of pregnancy, without other signs of respiratory tract infection and with unknown allergic cause, with complete resolution of symptoms within 2 weeks after delivery [5]. Pregnancy rhinitis occurs in approximately 20% of pregnancies, can appear at almost any gestational week, and affects the woman and possibly also the fetus. The pathogenesis of pregnancy rhinitis is not clear, but placental growth hormone is suggested to be involved. Smoking and sensitization to house dust mites are probable risk factors. It is believed that the increased levels of estrogen and blood during pregnancy result in the swelling of the mucus membrane causing the feeling of stuffiness. Sometimes these conditions also result in the production of excess mucus which helps to trigger pregnancy rhinitis [1, 5-7, 11].

It is often difficult to make a differential diagnosis from sinusitis: nasenedoscopy of a decongested nose is the diagnostic method of choice.

Nasal decongestants give good temporary relief from pregnancy rhinitis, but they tend to be overused, leading to the development of rhinitis medicamentosa. Corticosteroids have not been shown to be effective in pregnancy rhinitis, and their systemic administration should be avoided during pregnancy. Nasal corticosteroids may be administered to pregnant women when indicated for other sorts of rhinitis. Nasal alar dilators and saline washings are safe means to relieve nasal congestion, but the ultimate treatment for pregnancy rhinitis remains to be found [8, 9, 12].

Material and methods

We have examined 70 patients with pregnancy rhinitis: 20 patients were treated in the gynecology department and 50 – in outpatient clinic. The average age of patients was 23 years (17-28). Gestational age was from 15 to 27 weeks. All subjects were pregnant for the first time. Patients with a history of allergy did not participate in the survey. Also 50 healthy pregnant women (control group) registered in the antenatal outpatient clinic were examined.

50 patients with pregnancy rhinitis that hadn't obstetric pathology were included in the first group. 20 patients with threatened abortion due to the lack of progesterone were included in the second clinical group.

Complex examination of patients consisted of the following elements: a history taking, general ENT examination, determination of the hormonal status (vaginal smears), determination of fibrin in the blood plasma.

General characteristics of the studied patients are presented in the Table 1.

All of examined patients did not differ in age and were matched for gestational age and number of pregnancies in the history. Among the active smokers the majority was in a group of women without a disorder of nasal breathing (34% vs. 28% and 15%),

Table 1. General characteristics of the patients

Data	I group (n=50)	II group (n=20)	Control group (n=50)
Average age, years	19-26	18-27	17-28
Steroid dysfunction	27 (54%)*	12 (60%)*	3 (6%)
Polluted territory	9 (18%)	2 (10%)	5 (10%)
Passive smoking	17 (34%)*	6 (30%)*	8 (16%)
Active smoking	14 (28%)	3 (15%)*	17 (34%)
Use of oral corticosteroids	17 (34%)*	7 (35%)*	4 (8%)
Overweight persons	21 (42%)*	8 (40%)*	5 (10%)

** - p<0,001 (compared to control group)*

while among the passive smokers prevailed patients with pregnancy rhinitis (34% and 30% vs. 16%). Amount of women who were overweight (body mass index ≥25 kg/m^2) in groups of patients with pregnancy rhinitis was significantly higher (42% and 40% vs. 10%). Steroid dysfunction related to the beginning of pregnancy also was more prevalent in women with pregnancy rhinitis (54% and 60% vs. 6%).

Changes in the hormonal status of women were studied by determining the levels of progesterone and estradiol in the blood serum, as well as in the colpocytologic study [4].

Results

In patients with pregnancy rhinitis the changes of colpocytologic pattern specific to mild deficiency of progesterone were presented. It was confirmed by immunological analysis of estradiol and progesterone in serum (Table 2).

Despite the fact that the level of estradiol in all groups did not exceed the reference value, the level in patients with rhinitis was higher than that in the control group. Compared to the control group the levels of progesterone and progesterone/estradiol ratio were significantly reduced. The obtained results allow us to assert that a disorder of nasal breathing that occurs during pregnancy may be the first manifestation of its interruption, that develops on the background of a relative deficiency of progesterone.

The relative hyperestrogenism affects the homeostasis of the whole organism, that's why we also studied the levels of fibrinogen, bilirubin and hemoglobin. Evaluation of these blood components was conducted by standard methods [4].

The level of fibrin in the two groups of pregnant patients with rhinitis was significantly higher than in the control group. Levels of bilirubin and hemoglobin were higher in the control group.

Discussion

Pregnancy rhinitis is one of the most common respiratory diseases that have a negative impact on the course of pregnancy and fetal development. Therefore, to maintain the health of the mother and child it is necessary to have essential knowledge about rhinitis during pregnancy and the causes of its development.

There are precious few studies aimed to develop the treatment algorithm for patients with rhinitis during pregnancy. This fact is cheerless, because the disorder of nasal breathing can lead to severe complications, not only for mother, but also for fetus. That's why it is important to find solution to the problem of pregnancy rhinitis pathogenesis, prevention and treatment.

Table 2. Results of hormonal investigation

Groups	Estradiol (nmol/l)	Progesteron (pol/l)	Progesteron/ Estradiol
I group (n=50)	1147±197*	84±24*	73,23*
II group (n=20)	1374±92*	62±16*	45,12*
Control group (n=50)	943±64	234,5±12	248,14

** - p<0,001 (compared to control group)*

It is well known that during pregnancy a lot of adaptive changes aimed to ensure an adequate course of pregnancy, fetal growth and development take place in woman's organism. Significant restructuring of the functioning of the organism is associated with changes in the blood system, endocrine system and hemostasis. That can cause the development of transient abnormalities. These conditions, in particular, include pregnancy rhinitis. By this time, in the literature there are only a few reports on the mechanism of the development of this disease. Due to the lack of information on the pathogenesis of this disease the treatment of rhinitis during pregnancy is uncertain. In addition, there is no information in the literature on the relationship and impact of rhinitis on pregnancy.

As a result of a study of 70 pregnant women suffering from pregnancy rhinitis and healthy pregnant women (50), we found that in the majority of cases (38% and 56%) the disease appeared after hypothermia or cold. The onset of disease in the remaining patients were not associated with a particular cause. Amount of women who were overweight in groups of patients with pregnancy rhinitis was significantly higher (42% and 40% vs. 10%). Smoking, frequent colds and adenotonsillectomy history did not have an impact on the development of the pathology. The first manifestation of the disease (disorder of nasal breathing in 40% of cases) appeared at 12-15 weeks of gestation.

In the second clinical group a greater severity of nasal breathing disorder was observed: in 90% of cases it had a permanent character vs. 74% in pregnant women without severe obstetric pathology. In the vast majority of patients with rhinitis a disorder of hormonal regulation was observed. Moreover, in this group it was shown an increase of fibrinogen levels, which also is explained by the insufficiency of progesterone and hyperestrogenism. Treatment of hormonal disorders led to an improvement of the clinical course of pregnancy rhinitis that consisted in a decrease in swelling of the mucous membranes of the nasal cavity and nasal breathing improvement.

Conclusions

Pregnancy rhinitis often occurs on the background of the endocrine homeostasis disorder in the direction of the relative lack of progesterone. More expressed changes led to a deterioration of the symptoms of rhinitis during pregnancy. Treatment of hormonal disorders led to an improvement in the clinical course of rhinitis during pregnancy.

The results of the study show that a disorder of nasal breathing in patients with pregnancy rhinitis devel-

ops on the background of any steroid dysfunction and may be the first manifestation of its interruption.

The disorders of the blood coagulation system (increased level of fibrin) indicate the need for a detailed investigation of this group of women, taking into account the probability of development of thrombophilic pregnancy complications.

The disease was more common in patients with a history of hyperestrogenism, as well as in patients who were overweight. It is necessary to prevent the development of pregnancy rhinitis, adjust the level of estrogen before pregnancy and to adhere to certain diets for weight control.

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РИНІТ ВАГІТНИХ: НОВІ АСПЕКТИ ПАТОГЕНЕЗУ

С.Е. Яремчук

Резюме

У статті представлені результати дослідження, у ході якого визначено, що порушення носового дихання у вагітних, хворих на риніт, виникало на фоні стероїдної дисфункції і може бути першим проявом загрози переривання вагітності та патології розвитку плода. Виявлені зміни з боку системи згортання крові (підвищений рівень фібрину) свідчать про необхідність детального обстеження цієї категорії жінок, враховуючи можливість розвитку в них тромбофлібічних ускладнень вагітності.

Ключові слова: риніт вагітних, гіперестрогенія.