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METEOSENSITIVITY IN PREGNANT WOMEN

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Abstract: *Background.* About a third of the inhabitants of midlatitudes „feel" the weather. Meteosensitivity is more common in people having a little physical activity and various diseases. There is an opinion that meteosensitivity often occurs at pregnant women, however there are not many researches on this problem. Material and methods. Our objective was to investigate the impact of weather on the health of pregnant women. We carried out a survey of 254 postpartum women who were in obstetric hospitals of Grodno and Brest regions. We made the anonymous questionnaire including 26 questions about the state of health and meteosensitivity symptoms. *Results and conclusions.* Almost at a half of women (45.7%) meteosensitivity before pregnancy met seldom, at every fourth (24.4%) – it was frequent and at every third (29.9%) it wasn't observed. Less than a half of women (41.7%) have noted an increased meteosensitivity during pregnancy. The greatest impact on health was caused by air pressure changes (worsened health at 29.1% of respondents), magnetic storms (at 28.3%), rapid warming (at 28.3%), cloudy weather (at 26.0%), rapid cold snap (at 24.4%). Only 7.8% of women didn't note the influence of any weather factors. The most frequent symptomes were headaches (in 45.7% of cases), weakness (in 39.4%), sleepiness (in 34.6%), anxiety (in 22.0%), depressed mood (in 21.3%), low concentration and efficiency (16.5%). To cope with meteosensitivity pregnant most often used increasing the time of sleep and rest (68.5%), physical activity limitation (30.7%), taking vitamins (19.7%).

Key words: meteosensitivity, weather, climate change, pregnancy, labor, reproductive health.

Introduction

Each person doesn't exist by itself, it is inseparably linked with the nature. The functioning of our body depends not only on food and livelihood systems, but also on the moon phases, solar activity, weather conditions, air temperature and many other external factors [1].

About a third of the inhabitants of midlatitudes „feel" the weather. Meteosensitivity is more common in people not spending enough time outdoors, engaged in sedentary, mental labor, having a little physical activity. As a result of illness (flu, sore throat, pneumonia, diseases of the joints, etc.) or fatigue resistance and reserves of the body decline. That is why meteosensitivity is seen in 35-70% of people with various diseases. Every second patient with pathology of the cardiovascular system „feels" the weather. Meteosensitivity is more often observed in patients with weak (melancholic) and strong unbalanced (choleric) type of nervous system [2].

Both the weather as a whole and its individual components affect on our health. Air pressure fluctuations reduce blood oxygen saturation and mechanically irritate the nerve endings of the pleura, peritoneum, synovium of joints, as well as vascular receptors. The wind causes excitement of the nervous system, irritating the skin receptors. Humidity plays a role in maintaining the oxygen concentration in the atmosphere, affects the heat exchange and sweating. In most cases, exacerbation of diseases of the cardiovascular system occurs at high relative humidity (80-90%). The sudden change in temperature leads to acute respiratory infections. An excess of positive ions, formed in hot and wet weather, has an adverse effect on the body, which could exacerbate heart disease [2].

Mild meteosensitivity manifestations may be limited to a slight indisposition. When meteosensitivity is moderate, there appear objective signs: changes in blood pressure, electrocardiogram, etc. Severe meteosensitivity is manifested by heart pain, dyspnea, headache, dizziness. There may be anxiety, sleeplessness, general weakness, joints and muscles pain [2].

There is an opinion that meteosensitivity often occurs at pregnant women, however there are not many researches on this problem. Studies held in Spain and China show that exposure to elevated temperatures was associated with an increased risk of preterm birth in the following 3-4 weeks [3, 4]. In Scotland, researchers found that higher ambient outdoor temperature in the first trimester of pregnancy and/or lower ambient outdoor temperature in the third trimester are associated with reduced offspring birthweight [5]. According to a study held in Iran, the highest prevalence of preeclampsia was detected in summer, especially in September and August and the lowest prevalence was found in winter and early spring, especially in January and April [6]. The same data obtained from France – incre-

asing temperature or sunshine across both windows was associated with increased risk of severe preeclampsia [7]. But in Colombia, on the contrary, eclampsia rates are twice as high on cool or humid days than on days with average temperatures or humidities [8]. The research in Brazil revealed a higher incidence of hypertensive disorders of pregnancy in the cooler months and no significant effect of relative air humidity [9]. However, data from individual studies are not enough to assess the impact of weather on the health of pregnant women and pregnancy outcome.

Global warming has led to significant changes in weather worldwide. Belarus is not an exception – we now have a warm and unpredictable winter, cool summer, sometimes with rapid changes of air pressure and temperature [10]. It is predicted that the future climate will have more intense, longer lasting and frequent extreme heat episodes [3]. All this determines the relevance of our research.

Our objective was to investigate the impact of weather on the health of pregnant women.

Materials and methods

We carried out a survey of 254 postpartum women who were in obstetric hospitals of Grodno and Brest regions. We made the anonymous questionnaire including 26 questions about the state of health and meteosensitivity symptoms. Statistical data processing was performed using Microsoft Excel. Data are presented as mean values and statistical deviations. The main share of women respondents (92.9%) were 20-39 years old. Nine out of ten respondents (89.0%) were married, 7.9% – not married, 3.1% – divorced. Three out of four women (74.0%) were citizens and one in four (26.0%) were villagers.

Results

The average height of women was 166.4±5.9 cm, weight before pregnancy – 66.1±11.1 kg, body mass index (BMI) – 23.8±3.7. A significant underweight (BMI of 16 or less) wasn't met, low body weight (BMI 16-18.5) was at 3.1% of women, normal weight (BMI 18.5-25) was observed in more than a half of the respondents (62.2%), overweight (BMI 25-30) was at each fourth woman (27.6%), I degree obesity (BMI 30-35) – at 6.3% of the respondents, I degree obesity (BMI 35-40) – at 0.8%, III degree obesity (BMI 40 or more) wasn't met (Fig. 1). The average weight gain during pregnancy was 11.8±3.8 kg. The average number of pregnancies was 2.0±1.1, number of deliveries – 1.7±0.8. Every fifth woman (22.0%) had abortions in the anamnesis. On average, the birth took place at the term of pregnancy 275.4±12.1 days or 39.1±1.8 weeks.

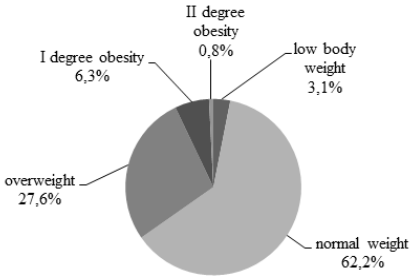

Fig. 1: Body mass index.

Only 4.7% of women reported that they smoke, and the remaining 95.3% – don't smoke (Fig. 2). Nobody of the interviewed women took alcohol once a week or more often, 6.3% took it several times a month, one in three (39.4%) – once a month or less, more than a half of the women (54.3%) didn't take alcohol (Fig. 3).

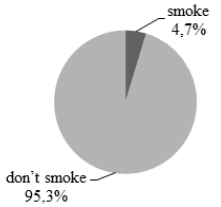

Fig. 2: Smoking.

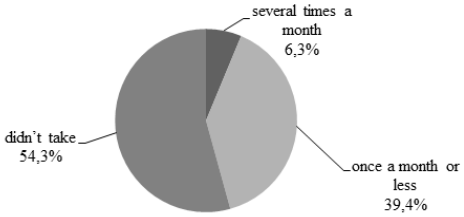

Fig. 3: Taking alcohol.

An arterial hypertension was observed at almost every tenth woman (9.4%), heart disease – at 4.7%, migraine – at 4.7%, anemia – at every ninth (11.0%). Allergies (including dust, citrus, pollen, medicines, metal products, cold) met at one out of six women (16.5%), chronic rhinitis – almost at every tenth (9.4%), bronchial asthma – at 5.5% and chronic bronchitis – at 3.1%. Every fourth respondent (23.6%) had chronic gastritis, 5.5% – ulcer of the stomach or duodenum, 0.8% – irritable bowel syndrome, 1.6% – chronic pancreatitis. Chronic pyelonephritis was noted at every seventh woman (13.4%), osteoarthrosis – at 0.8%, osteochondrosis – at 5.5%, radiculitis – at 2.4%, eczema or dermatitis – at 3.9%, other diseases – at 11.8% (including 2 women with psoriasis, 3 – cholelithiasis, 2 – urolithiasis, 6 – miopia,

2 – astigmatism, 2 – mitral valve prolapse, 3 – diffuse goiter, 2 – arterial hypotension, 3 – chronic tonsillitis, 1 – cardiosclerosis after a myocarditis). Only every seventh woman (15.0%) had no comorbidities.

At the most of respondents (96.1%) pregnancy has come in a natural way, at 3.1% – after the stimulation of an ovulation, at 0.8% – after an in vitro fertilization (IVF) (Fig. 4).

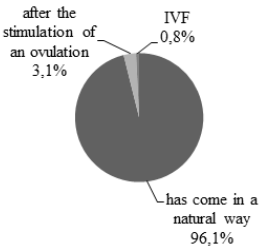

Fig. 4: Pregnancy.

Complications during pregnancy were: multiple pregnancy – at 2.4% of women, toxicosis of pregnancy – almost at a half (43.3%), preeclampsia – at every fifth (20.5%), gestational diabetes – at 0.8%, acute infectious diseases during pregnancy – at every tenth (10.2%), placental insufficiency and fetal development delay – at 3.1%, fetal hypoxia – at 6.3%, placental abruption – at 4.7%, low placentation or placenta previa – at 7.9%, threatened abortion or threatened preterm labor – more than at every fourth (28.3%), isthmic-cervical insufficiency – at 2.4%, polyhydramnios – at 4.7%, oligohydramnios – at 2.4%, contracted pelvis – at 7.1%, rhesus incompatibility – at 6.3%. Only every seventh woman (15.0%) hadn't any complications of pregnancy.

The labor took place in a natural way at two of three questioned women (66.1%), with labor stimulation – at every eighth (12.6%), by caesarean section – at every fifth woman (21.3%) (Fig. 5).

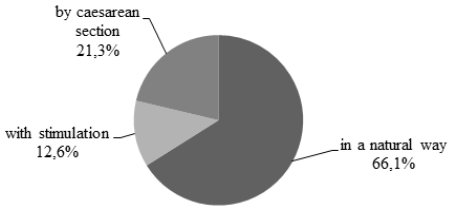

Fig. 5: Labor.

5.5% of respondents had a preterm labor, prolonged pregnancy occurred also in 5.5%. 6.3% of women had an accelerated labor, 4.7% – prolonged labor, the same number of women had a premature rupture of membranes, 7.1% – powerless or discoordinated labor, 1.6% – bleeding and nearly one third (29.9%) – injuries of maternal passages. A child's body weight less than 2500g was observed in 3.9% of cases, more than 4000g – in more than one out of eight respondents (12.6%). Injuries of the fetus were observed in 4.7% of births. Only one third of women (35.4%) had an uncomplicated labor.

To the question „What time of year do you like more?", almost half of respondents (47.2%) answered „summer", almost one third (29.1%) – „spring", one out of seven (14.2%) – „fall" and one out of ten (9.4%) – „winter" (Fig. 6).

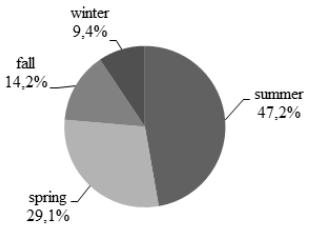

Fig. 6: The favorite time of year.

Almost a half of women (44.1%) are interested in a daily weather forecast, 41.7% read it from case to case, and the rest 14.2% – rarely.

Before pregnancy meteosensitivity symptoms were frequent at every fourth questioned woman (24.4%), almost at a half (45.7%) they were rare and at every third (29.9%) they weren't (Fig. 7).

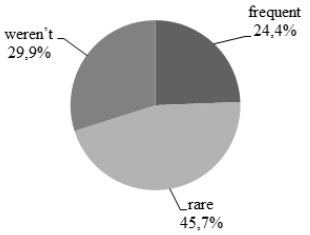

Fig. 7: Meteosensitivity symptoms before pregnancy.

Less than a half of the respondents (41.7%) noted an increased sensitivity to weather changes during pregnancy, the remaining 58.3% didn't notice that (Fig. 8).

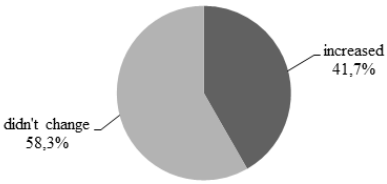

Fig. 8: Meteosensitivity at pregnant women.

More than a half of respondents (52.8%) could feel weather changes, the remaining 47.2% couldn't.

Rapid warming worsened the state of health at every fourth woman (28.3%) as well as a rapid cold snap (at 24.4%) and cloudy weather (at 26.0%). 6.3% of women had the worsening of health in a sunny weather, one out of six (16.5%) – in a rainy weather, every tenth (10.2%) – during a thunderstorm, one out of nine (11.0%) – in a strong wind, 4.7% – in a dry weather, every tenth (10.2%) – in a high humidity. Air pressure changes worsened the state of health almost at every third respondent (29.1%), magnetic storms – at every fourth (28.3%), changes of moon phases – at 4.7% (Fig. 9). Only 7.8% of women didn't noted the influence of any of the above factors.

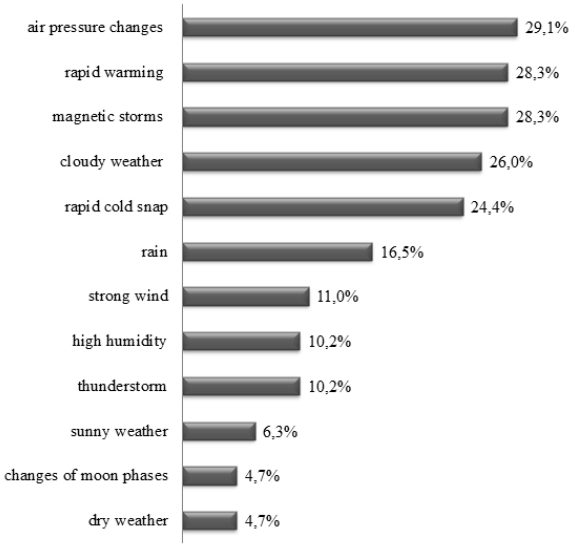

Fig. 9: Weather factors that worsened the state of health.

Dizziness at weather changing was observed at one out of eight women (12.6%), headaches – almost at a half (45.7%), weakness – almost at every third (39.4%), loss of concentration and efficiency – at every sixth (16.5%). Depressed mood met at every fifth respondent (21.3%), as well as irritability (22.0%). Anxiety was observed at 8.7% of women, sleepiness – at every third (34.6%), insomnia – at one out of eight (12.6%), libido decrease – at 0.8%. Heart pain was at 3.1% of respondents, tachycardia – at 3.9%, hypotension – at 4.7%, hypertension – at 7.1%, stuffiness in nose – at 5.5%, dyspnea – at 4.7%. Loss of appetite took place at 7.9% of the interviewed women, increased appetite – at 1.6%, nausea – at 3.1%, edema – at 2.4%, low-back pain – at 7.9%, extremities' pain – at 8.7%, joints' pain – at every tenth respondent (10.2%). Only 6.3% of women haven't reported about any of these symptoms.

In a rainy weather every fifth pregnant (20.5%) reported about an increased fetal movement, every tenth (10.2%) – a reduction of fetal movement, the rest 69.3% told that fetal movement has not been changed.

Almost every third respondent (29.9%) often had to change her plans because of the weather changes, and 70.1% of women didn't note this. More than a half of the respondents (54.3%) have gathered an information about meteosensitivity from the Internet, one third (32.3%) – from TV shows, one fifth (19.7%) – from friends, one eighth (12.6%) – from books and magazines, 5.5% – from the doctor and 7.9% didn't know about this phenomenon.

The majority of respondents (96.9%) hadn't sought medical help about meteosensitivity, and only 3.1% had. Among the methods to cope with meteosensitivity two-thirds of pregnant women (68.5%) used an increasing of sleep and rest time, one out of three (30.7%) – a physical activity limitation, 2.4% – an increasing of physical activity (exercises, fitness), 9.4% – water procedures (shower, rub-down), 7.1% – a massage, 4.7% – diet changes, the same number used sedative drugs, 7.1% – analgetics, one out of five (19.7%) – vitamins, 0.8% – food supplements, 3.9% – phytotherapy and aromatherapy.

Discussion

Analysis of the questionnaires showed that data on the health state and life of surveyed women reflect general trends in the population. Generally, the respondents were married (89.0%), and most of them (74.0%) were citizens. There usually was a term labor, and the number of births was 1.7±0.8 at one woman. Such a low delivery parity is characteristic of the inhabitants of developed countries.

85.0% of women reported about the presence of different diseases, that also reflects the global trends in the spread of chronic diseases. The same number of postpartum women had abnormal pregnancy, that may be due to improved diagnostic methods and an increase of comorbidity. Only a third of women (35.4%) had a labor without any complications.

The prevalence of meteosensitivity at women was significantly higher (almost at the half of them symptoms were rare and at every fourth they were frequent) than the average in the inhabitants of midlatitudes (every third person). At many respondents (41.7%) symptoms increased during pregnancy.

Similarly to other people, the greatest impact on the health of women during pregnancy was caused by changes in the air pressure (worsened health at 29.1% of respondents), rapid warming (at 28.3%), cloudy weather (at 26.0%), rapid cold snap (at 24.4%). There is also a significant impact of magnetic storms (at 28.3%).

Symptoms of meteosensitivity at pregnant women don't significantly differ from the symptoms at others people.

The most frequent manifestations were headache (in 45.7% of cases), weakness (in 39.4%), sleepiness (in 34.6%), irritability (in 22.0%), depressed mood (in 21.3%), low concentration and efficiency (in 16.5%), sleeplessness (in 12.6%), joints' pain (in 10.2%), anxiety (in 8.7%), extremities' pain (also in 8.7%).

To cope with meteosensitivity pregnant most often used increasing of the time of sleep and rest (68.5%), limitation of physical activity (30.7%), taking vitamins (19.7%).

Conclusions

Thus, the majority of women experiencing the impact of weather factors on health, and many of them indicate an increased meteosensitivity during pregnancy. However, only a small percentage of women try to cope with its manifestations actively. It is necessary to inform pregnant women about how to reduce meteosensitivity, especially when there is a rapid change of weather and if woman has chronic diseases. This will improve the quality of life and help to avoid possible complications.

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