Depression and anxiety during pregnancy as risk factors for preterm labour and low birth weight

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Original article

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Summary
Although the postnatal depression is a well-studied and described in the medical literature, much less is known about the antenatal depression. Meanwhile, studies show that approximately twelve percent of women experience mood disorders during pregnancy.
The aim of this article is to review research concerning the relationship between depression and antenatal complications of pregnancy and childbirth such as premature birth (according to research depression doubles the risk of termination of pregnancy before 37 weeks gestation) preeclampsia and low birth weight.
The article also discusses ways of screening the emotional state of pregnant women, the author draws attention to certain information from the interview with the patients, which could help gynecologists assess their emotional state and decide about further treatment.
Key words: Key words: depression, maternal mental health, prematurity, low birth weight

INTRODUCTION

Approximately 7% of the general population [1] and 12% of pregnant women experience clinical depression [2–7]. When untreated, depression can have dramatic consequences both for the mother and the child. Maternal depression doubles the risk of premature labor and pre-eclampsia [12,13]. It also increases the risk of diabetes [14].

LITERATURE OVERVIEW

Research shows that depression affects the course of labor, and a Caesarean section and epidural anesthesia are performed more frequently [15,16]. In an economic analysis conducted in Canada, it has been estimated that prenatal depression costs 14 billion dollars annually [17].

Maternal depression affects the fetus as well. Newborns have a lower birth weight, greater difficulties in regulating their behavior, greater problems with sleeping and persisting relatively higher right frontal lobe activation in EEG [18–21]. Additionally, a sizeable proportion of women who suffer from depression during pregnancy develop postnatal depression [22], which is associated with subsequent less optimal child development.

The mechanism of the influence of mother's depression on her health and the course of pregnancy has been investigated in interdisciplinary studies. They have revealed that neurochemical changes associated with depression lead to disorders of the adaptation of the endocrine system, immune system and nervous system to the correct course of pregnancy [23–25]. In the

general population of depressed patients, elevated C-reactive protein (CRP) as well as increased IL-1 and IL-6 cytokines have been found [26]. The study conducted on a group of pregnant women has shown that inflammatory markers and depression symptoms at the beginning and in the middle of gestation are correlated (from 0.44 to 0.53) [16]. This finding can elucidate the relationship of depression with preterm labor. Increased maternal CRP is a predictor of premature labor [16]. Considering the fact that in 40% of cases the cause of premature labor remains unknown (it can occur in healthy women with no pathology of pregnancy [10]), undiagnosed and untreated clinical depression could explain a certain part of these cases.

Apart from depression, anxiety and stress can also be associated with a greater risk of a shorter pregnancy. Women with increased anxiety were observed to have increased corticoliberin (CRH) and cytokine levels. These changes can be connected with premature labor [16,27,28]. Research shows that negative consequences in the form of shorter pregnancy can also be caused by anxiety, which is frequently referred to as "developmental," concerning pregnancy itself, concerns about the new role of a parent and life changes [29,30]. The study conducted by Mancuso et al. [30] has demonstrated that pregnancy in women who experience higher degrees of anxiety and present higher CRH levels is shorter than that of women with a lower level of CRH. Sudden and very intense stress, e.g. due to a death of a close person or a terrorist attack, can lead to the termination of pregnancy before the 20th week [31].

Anxiety during pregnancy is also associated with the cognitive and psychomotor functioning of the child after delivery [32,33]. The study conducted by Davis and Sandman [33] shows that the consequences of maternal stress for fetal development are associated with the trimester. Intense stress at the beginning of pregnancy (tested by the cortisol level in saliva) is associated with a slower pace of development and a lower level of psychomotor development at 12 months of life. Increased stress in the third trimester, however, is associated with faster development of neonates and better cognitive outcome. Increased pregnancy-specific stress in the first trimester is associated with worse outcome in infants at the age of 12 months.

Tab. 1. Risk factors for prenatal depression

Risk factors for prenatal depression
• Previous episode of depression
• Personality traits (high levels of neuroticism, low self-esteem)
• High stress concerning fetal health
• Stress associated with a serious marital conflict
• Family history of depression or bipolar disorder
• Violence in childhood
• Single motherhood
• Having more than 3 children
• Smoking
• Low income
• Mother younger than 20
• No social support
• Domestic violence
• Previous miscarriage or child loss

In the light of the literature reports, prevention, early identification as well as treatment of patients struggling with increased levels of depression and anxiety seem important. Table 1 presents risk factors of prenatal depression based on the literature. These data can be useful both for obstetricians and primary care physicians and help them to identify potentially sensitive patients.

Questions concerning a previous episode of depression, social support, stress and anxiety associated with pregnancy could facilitate the identification of potentially sensitive women. Moreover, a simple and short questionnaire, e.g. Edinburgh Postnatal Depression Scale, can be useful. In 1996–2005, a double increase in prescribing antidepressants during pregnancy was observed [34]. For instance in Sweden, depression is treated pharmacologically in approximately 3% of pregnant patients [35]. Safety data concerning such drugs are conflicting. Meta-analyses of studies draw attention to their relationship with miscarriages [36], congenital heart defects [37], behavioral changes of neonates, e.g. withdrawal from social interaction [38], and premature labor [39]. The relationship of antidepressants and preterm labor was considerable, although less significant, even when depression itself was included in the analysis [39]. Research shows that short-term interpersonal psychotherapy (limited to 16 sessions) is efficacious [40]. However, the lack of availability and knowledge concerning this form of treatment is its limitation. Studies reveal that commonly available and inexpensive forms, such as physical exercise and relaxation are effective. Particularly relaxation was associated with stress and anxiety reduction [41].

A meta-analysis conducted by Shilp et al. [42] has shown that practicing yoga is associated with a reduction of the percentage of premature labors, intrauterine growth retardation, low birth weight and sleep disorders. Studies on the efficacy of prenatal yoga based on randomized clinical trials have shown that this form of exercise is associated with a reduction of pain and discomfort associated with pregnancy and perceived stress.

The review of world literature draws attention to the consequences of prenatal depression that go beyond women's subjective perception. Identification, prevention and treatment seem particularly significant since, as research shows, in the case of affective disorders in the perinatal period, there are two patients – the mother and child.

CONCLUSION

1. Approximately 12% of women experience prenatal depression. The literature review shows that these patients are at risk of premature labor, pre-eclamp-

sia, hypertension and gestational diabetes. A half of these patients suffer from depression.
2. Data obtained from the doctor–patient interview and the presence of so-called "warning signs" in the medical history, such as: a previous episode of depression, no social support as well as the declared stress level associated with the relationships with the close ones and the pregnancy itself, are risk factors of both prenatal depression and complications during pregnancy.
3. The literature review shows that both short-term interpersonal psychotherapy and relaxation (e.g. yoga) or physical exercise are significantly correlated with a reduction of depressive symptoms.

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