



Research Article

STATE KALLIKREIN-KININ SYSTEM IN PREGNANT WOMEN GROUPS INFECTIOUS RISK

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ABSTRACT

This article describes the performance of enzymes KKS infectious risk during pregnancy. A significant reduction of prekallikrein and kallikrein, and increase of TATA (total antitriptic activity), BAEE (N-benzoyl-1-arginine ethyl ether) kininase is shown that can be used as a marker of inflammation in pregnant women infectious risk.

KEYWORDS:pregnancy, infectious complications, enzymes of kallikrein-kinin system.

INTRODUCTION

Over the years, the prevention and treatment of infectious diseases of the urogenital tract is the actual problem of researchers in the area of basic sciences and medical clinicians of various specialties [1,5]. Despite significant advances in the diagnosis and treatment of urogenital infections, their frequency has a strong tendency to increase. Infectious pathology takes one of the first places in the structure of perinatal risk factors, recent years their frequency ranges from 6.9 to 13.1%. The average incidence of diseases of the genitourinary system of pregnant women in the last 10 years significantly increased from 8.0% to 11.8% [1,5]. The presence of urogenital infection during pregnancy presents a real danger both for mother and fetus. This increases the likelihood of premature termination of pregnancy up to 70%, the risk of antenatal intrapartum infection, development of inflammatory complications in the postpartum period increases, as the lower genital tract of pregnant women is a reservoir of a large number of different potentially virulent microorganisms. On the other hand infection affects the homeostasis of the organism, including the activity of

proteolysis enzymes[2]. Activation of the kallikrein-kinin system (KKS) is a universal reaction to injury, including the structural disruption of cell membranes due to the activation of lipid peroxidation (LPO) [4]. Product of KKS activation - vasoactive peptide bradykinin is a pathogenetic factor in the development of many diseases that cause vasodilation, edema, pain, impaired microcirculation [2,4]. KKS activity is regulated by protease in inhibitors, so reduction of the main inhibitors activity leads to uncontrolled activation of this system [2,4]. It is known that blood KKS is a central link in the complex of humoral system which regulates homeostasis and implements adaptive-defensive reactions of the body [4,7]. KKS is actively involved in the supply of organs and tissues by oxygen in hypoxic conditions [4,7,8]. The most important physiological regulator of the KKS is the level of functional activity of VNS [4,9]. KKS activation may indicate unfavorable course of bacterial and viral infections [4,8,9].

The [6] study of the reserve ability of the CCR blood of women with physiological pregnancy is carried out in the work. The findings show the need for a differentiated correction of the revealed disorders of reserve ability of kininogenetic and inhibitory links of KKS in patients with

uncomplicated pregnancy to prevent complications in childbirth. The physiological significance of kinins in pregnancy is in the regulation of hemodynamics and blood rheology property of a woman, utero-placental blood circulation, contractile activity of myometrium during labor [4,6]. In its turn, the gestational process is a specific, closely related to the nature of pregnancy, changes in blood KKS activity [2,4]. So, it is established that excessive activation of kininogenesis plays a significant role in the pathogenesis of the premature termination of pregnancy [2,4,6] and the reduction of kinin production is typical for late gestosis, the severity degree of manifestation of which determines their severity [6].

In this regard, the study of the state of KKS enzymes activity of in pregnant women with infectious risk is relevant from the point of view of pathological process study, assess of the infection severity and development of evidence-based treatment.

The purpose of this study was to examine the state of KKS enzymes activity in pregnant women with high infectious risk.

MATERIAL AND METHODS

The study included 42 pregnant women aged 17 - 32 years, of them 22 (52.4%) were primiparous and nulliparous, 20 (47.6%) had 2 or more pregnancies. Pregnant women were divided into 2 groups: group 1 (18 pregnant women) - with physiological pregnancy, group 2 (24 pregnant women) - a group of infectious risk of: a history of frequent colds, chronic pyelonephritis, obesity, chronic endometritis, chronic adnexitis, spontaneous late abortions and premature birth, as well as pregnant women with chronic and acute polyhydramnios, exacerbation of urogenital diseases infectious nature during pregnancy. All pregnant women underwent direct microscopic and bacteriological study of discharge from the genitals; microbiological testing was performed according to standard procedures. KKS enzyme activity in plasma was determined by spectrophotometric and chromatographic methods [2,3].

RESULTS.

Microbiological landscape of pregnant women was as follows: *St. Epidermidis* - at 29,6%, *St.aureus* - at 8,4%, *St.faecalis* - 14,4%, *St. pyogenes* - 0.5%, *E.coli* - 20,3%, *Klebsiella* - 2,9%, *Enterobacter* - 0.5%, *Proteus mirabilis* - 3,3%, *Pseudomonas* - 0.23%, *Candida albicans* - in association with other agents - 18.9%.

In the study of blood detected by Enzyme immunoassay (ELISA) method CMV infection was revealed in 10.3%, ureaplasma in 10.5%, HSV type 1 in 3.9%, HSV type 2 in 2.2%, toxoplasmosis in 5.8%.

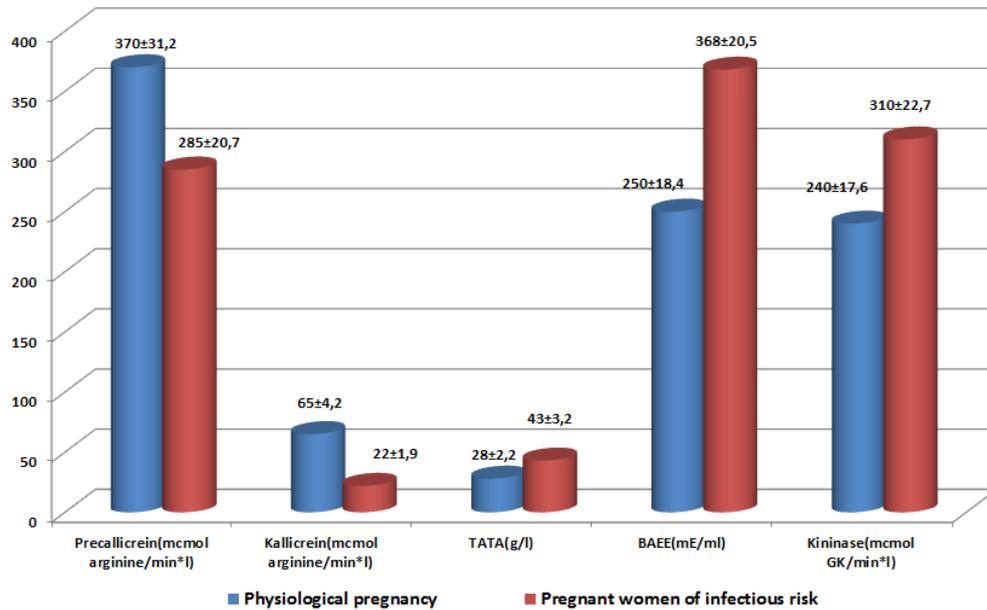
In 48.9% pregnancy was developing on the background of the threat of termination of pregnancy; on the background of polyhydramnios in 17.6%, on the background of exacerbation of infectious disease of the urinary tract in 18.2%, the phenomena of vaginitis in 44.7%.

DISCUSSION

It can be seen that KKS enzymes indexes are different in physiological pregnancy and in infectious risk group of pregnant women (fig). Thus, in physiological pregnancy the content of prekallikrein makes 370, and in the main group of pregnant women it is decreased by 1.3 times; kallikrein is respectively reduced by 2.9 times; TATA on the contrary is increased by 1.5 times; BAEE index is also increased by 1.5-times compared with physiological pregnancy. Kininase index is increased by 1.3 times compared to physiologically normal pregnancy.

Thus, a significant decrease in indicators such as prekallikrein, kallikrein, as well as an increase in BAEE, GATA, kininase the study of KKS enzymes can be a marker of the severity of inflammatory process in pregnant women of infectious risk.

Figure 1: Changes in the activity of KKS enzymes during pregnancy with an infectious risk compared to the physiological pregnancy



CONCLUSIONS

- It has been shown that kallikrein and prikallikrein activity during pregnancy with infectious risk is reduced, respectively by 2.9 and 1.3 times, as well as TATA, BAEE activities are increased by 1.5 times and kininase in 1.3 times compared with physiologically normal pregnancy.
- Significant reduction of activity prekallikrein, kallikrein and increased activity of BAEE, GATA, kininase can be used as a marker of severity of inflammatory process in pregnant women of infectious risk.

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