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INFLUENCE OF CHRONIC TOXIC HEPATITIS ON LACTATION PROCESSES

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ABSTRACT

The qualitative composition of milk of female rats with chronic heliotrin hepatitis in lactation dynamics was studied. We investigated the amount of protein, carbohydrates, enzymatic activity and immunocomponent cells (ICCl) of their milk during breastfeeding. A decrease in protein and carbohydrate content from 1 day of lactation, dipeptide hydrolase. γ-amylase and maltase activity and a decrease in the number of ICCL (monocytes, macrophages, small lymphocytes) immediately after birth, most pronounced on the 14th day of lactation. On the 21st day of breastfeeding, ICLC in the milk of females with toxic hepatitis are not determined.

***Key words: hepatitis, milk, lactation, immunocompetent cells, proteins, carbohydrates, enzymes*.**

INTRODUCTION

It is known that breast milk is an ideal food product necessary for the growth and development of a newborn during breastfeeding, in addition, the mammary glands after birth are the only organ that binds the body of a mother and baby. The transfer of adoptive immunity, as well as many biologically active substances through mother's milk, is crucial for the development of the immune, digestive and many other systems of the newborn's body [6,7]. However, in the case of maternal pathology there is a violation of these relationships. In particular, it was found that in newborns from mothers with hepatic pathology, one of the most common symptoms is a violation of digestion [1]. However, in the available literature, the issues of the influence of hepatic pathology on lactation processes have so far remained poorly understood. In this regard, the aim of our study was to study the morphological and functional features of the lactation process in toxic hepatitis.

MATERIALS AND RESEARCH METHODS

The work was carried out on 4-month-old female white outbred rats weighing 120-130 g (110). which were contained in a normal laboratory diet. As a model of hepatitis, we used chronic heliotrinal intoxication according to the generally accepted technique. Experimental females were divided into 2 groups: control and experimental. The experimental group of rats (60) was injected subcutaneously with heliotrin at a dose of 0.05 mg / gram of animal weight weekly for 6 weeks. Control animals (50) were injected with sterile saline.10 days after the last injection, the males were planted in the females of both groups. For the study, milk samples of the control and experimental animals were used on 1. 3. 7. 14. and 21 days of lactation. Milk in rats under mild ether anesthesia was obtained by manual milking after preliminary administration to females of oxytocin at a dose of 1 E per rat 10-15 minutes before milking. In milk samples, the total amount of protein, carbohydrates, and dipeptide hydrolase enzyme activity was determined. using the glucose oxidase method according to Dalkwist for maltase (EC 3.2.1.20) and according to Aurichio and Rubino for γ-amylase [EC 3.2.1.3]

[4.7].Enzymatic activities in all cases were calculated per 1 ml of milk and expressed in micromoles / min of glucose formed. For cytometric studies of immunocompetent (ICCl) milk cells, smears were prepared and stained according to May-Grunwald. Calculation of ICCl was carried out in 20 fields of vision from each preparation (approx. 15 x vol. 90). where 5 preparations from each animal were examined. The obtained data were processed by the method of variation statistics according to the Fisher-Student. The differences satisfying $P < 0.05$ were considered reliable.

RESULT AND DISCUSSION

As a result of our research, it was established. that chronic heliotrinal intoxication of female rats before pregnancy contributes to a significant change in the qualitative composition of milk in the dynamics of lactation. In particular, starting from 3 days after giving birth, a 1.1-fold decrease in the total amount of protein was noted compared with the control (the amount of protein in the control group of animals was 9.9 ± 0.19% relative to the experimental 8.5 ± 0.19%).It should be noted the preservation and progression of this trend until the end of the lactation period, where on the 21st day of lactation this indicator increases to 1.3 times (up to 7.0 ± 0.21% in the experimental group, 8.9 ± 0.16% under control). A similar pattern was observed from the side of milk carbohydrates. However, it should be noted that in the milk of females with toxic hepatitis, a decrease in the amount of carbohydrates was more pronounced than protein. If on the first day of lactation the amount of detected carbohydrates is 1.1 times lower than in the control (2.5 ± 0.12% relative to 2.1 ± 0.10% in the experimental group), then by the end of lactation this indicator increases to 2.2 (up to 1.2 ± 0.042% relative to 2.6 ± 0.13% under control).Along with changes in the quantitative composition of proteins and carbohydrates, a change in the enzymatic spectrum of milk was also established. Decrease in dipeptide hydrolase (on day 1 of lactation in the control 0.40 ± 0.012, in the experimental group 0.35 ± 0.011; on day 21 of lactation control 0.60 ± 0.035 relative to the experimental group 0.35 ± 0.018 in μmol / min / gram protein) , maltase (on the 1st day after birth with a control of 0.59 ± 0.020 in the experimental group 0.51 ± 0.021; on the 21st day of lactation 0.44 ± 0.019 in the experimental group, relative to the control of 0.66 ± 0.014) and γ-amylase (immediately after delivery decreases to 0.10 ± 0.001 with a control of 0.12 ± 0.002; and on the 21st day of lactation, it decreases to 0.06 ± 0.0003 relative to a control of 0.13 ± 0.001) of milk activity, in contrast to protein and carbohydrate-synthesizing functions, it is noted immediately after birth.It should be noted that in the dynamics of lactation, the progression of a decrease in maltase and dipeptide hydrolase enzymatic activities was more pronounced.

Cytometric studies of milk ICCL showed that the main type of ICLC delivered to rat rat breast milk is monocytes and macrophages, as well as small lymphocytes (the total number of milk ICLC in 20 fields of view is 216.3 ± 15.0, monocytes 109.1 ± 6, 0; macrophages 46.3 ± 2.6; small lymphocytes 28.8 ± 1.2). In chronic heliotrin intoxication, from the first days of lactation, a decrease in the total number of ICCL is observed (total number of ICCl 139.0 ± 11.4; monocytes 72.6 + 2.56, macrophages 32.1 ± 1.81; small lymphocytes 18.5 ± 1.68).The most pronounced decrease in the number of cells occurs on the 14th day of lactation (where the total number of cells in the milk of the control group of animals reaches 45.1 ± 2.78 with the experimental 21.6 ± 1.94; the number of monocytes in the control is 11.3 ± 0, 33 experiments 7.9 + 0.39; macrophages 9.8 ± 0.68 relative to experimental animals 2.9 ± 0.39; small lymphocytes 7.3 ± 0.68 with experimental 3.5 ± 0.27; and medium lymphocytes from 14.1 ± 1.01 in the control, reduced to 5.6 ± 0.35 in the experimental group). It should also be noted that by the end of the lactation period, in contrast to the control group of animals. ICLC is not found in the milk of females with toxic hepatitis.

Analyzing the results, it is necessary to indicate that for the full development of the infant. starting from the first day after childbirth, protein components are required: “the main plastic material”, and. of course, easily digestible carbohydrates of mother’s milk [3]. In addition, a certain dynamics of the level of hormones in milk is revealed, associated with their participation in the process of metabolic adaptation of newborns to their prenatal existence and causing the restructuring of protein, carbohydrate and fat metabolism in the postnatal period.Colostrum and milk enzymes, which are delivered by breastfeeding to the newborn’s body, also have a beneficial effect on the processes of its adaptation, affecting the metabolism of proteins and carbohydrates in the intestine [7]. It was established that in the offspring of rats with chronic hepatitis, there is a steady decrease in body weight gain, and a lag in the structural and functional development of the small intestine [1.2.5].Perhaps one of the reasons contributing to these changes in the period of lactotrophic nutrition is the decrease in the amount of protein, carbohydrates and the decrease in the enzymatic activity of milk that we discovered affects the composition of the intestinal chyme, which in turn affects its microflora, then on the absorption and immune relationships. Reduction of cellular components. Apparently, it is one of the factors characterizing a decrease in the immunomodulating function of milk, in addition, a decrease in the number of macrophages, monocytes and lymphocytes, contributes, on the one hand, to impaired transmission of adoptive immunity. on the other hand, as indicated in our previous studies [0].The intake of lysosomes, lipid droplets present in these cells is significantly reduced, the trophic effect and immunobiological properties of breast milk are significantly reduced, allowing the baby to adapt and survive in the "world of microbes", where he enters immediately after birth [2.10].

CONCLUSION.Thus, as a result of our study, it was found that chronic toxic hepatitis leads to a significant decrease in the qualitative composition of milk during lactation. There is a decrease in the amount of proteins and carbohydrates of milk, starting from 3 days of lactation, a decrease in dipeptide hydrolase, maltase and y-amylase activity of milk immediately after childbirth, which progresses to the end of the period of breastfeeding. When researching ICCl of milk, a decrease in their total amount from the first days of lactation is observed, characterized by the absence of ICCl in the milk of hepatitis females on the 21st day of lactation.

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