Shot report

BIOLOGICAL ASPECTS OF INFRINGEMENTS THROMBOCYTE HEMOSTASIS

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The research of trombocytic infringements at newborn calves with dyspepsia has the important practical meaning, because the activation of a primary link hemostasis plays a conducting role in activization hemostasis as a whole, increase of viscosity and deterioration hemorheology with inclination to itravascular thrombocytes formation. At the same time the infringements aggregative of ability thrombocytes and its itravascular of activity are very poorly investigated. The purpose of work is to research features of infringement trombocytic of a link hemostasis at newborn calves with dyspepsia.

Materials and methods

75 newborn calves with dyspepsia for 1-3 days from 1-2 calving the healthy cows were under supervision. The feeding and the contents was carried out in standard conditions of calf-house. 24 healthy newborn calf have compounded of control group. The capture of blood was conducted at morning o'clock. The inspection included definition of level average molecules in plasma and washed and resuspendition thrombocytes on [1]. Activity of peroxide oxidation of plasma lipids (POL) was defined under the contents of TBA-active products, acylhydroperoxides (AGP) [2], and intrathrombocyte the POL on concentration of a basal level of malonic dial in reaction of restoration by an thiobarbituricum acid [12], in updating [7] and AGP [2]. Intrathrombocyte antioxidation system characterized activity catalase and superoxiddismutaza (SOD) [8].

In resuspendition thrombocytes was defined the contents of a cholesterin by an enzymatic colorimetric method, and phospholipids on phosphorum [6]. Activity and time of formation endogenic thromboplastin was investigated [10]. Indirect estimation of arachidonic acid metabolizm in thrombocytes was defined by T.A Ermolaeva's and co-authors (1992) method with registration at photoelectriccolorimeter [5]. Calculation of quantity thrombocytes in capillary blood made in the Goryaev's chamber. Aggregation of thrombocytes (AT) was investigated by a visual micromethod [3] with ADP inductors ($0,5x10^{-4}$M.), collagen (cultivation 1:2 of the basic slurry), thrombinum (0,125u.e./ml.), ristomycinum (0,8 mg/mls.), adrenaline ($5x10^{-6}$M.) and its combinations: ADP+adrenaline, ADP+collagen and adrenaline+collagen. Morphological itravascular of activity of thrombocytes (IAT) was defined [10]. The statistical processing of the received results is carried out with usage of Students' criteria.

Results of research

The calves with dyspepsia the increase a POL of plasma were marked. So, the concentration of TBA-active products in plasma has made 5,10±0,02 mcmole/l., in the control - 3,92±0,06 mcmole/l. The level MD in thrombocytes also has appeared is raised (1,54±0,004 nmole/10^9 thr.) and in the control (0,89±0,02 nmole/10^9 thr.), which testify to activation in its of free - radical oxidation (FRO) in connection with easing intrathrombocyte of antioxidizing activity. The contents AGP in plasma of the sick calves was 3,50±0,01 D_{233} /1 ml. (the control 1,92±0,02 D_{233} /1 ml. Into thrombocytes of the sick calves AGP (3,49±0,01 $Д_{233}$ /10^9 thr.) also essentially exceeded control parameters (2,87±0,04 D_{233} /10^9 thr.).

The activation thrombocytes POL in the sick calves became possible as a result of essential slackening antioxidizing enzymes of platelets - SOD - 1250,0±4,36 IU/10^9 thr. (the healthy calves 1780,0±2,06 IU/10^9thr.) and catalase - 5690,0±21,0 IU/10^9thr. (in group of comparison 10500,0± 11,05 IU/10^9thr.). The level average molecules in plasma at 280 nm. made 0,49±0,01u.e., at 254 nm. - 0,32±0,02u.e., against the control 0,32 ±0,002u.e. and 0,24±0,03u.e., accordingly. Into thrombocytes of calves with dyspepsia average molecules have made at 280nm. - 0,061±0,02 u.e./10^9 thr., at 254nm. - 0,069±0,03u.e./10^9 thr. (in the control

0,050±0,04u.e./10^9 thr. and 0,055±0,0403 u.e./10^9 thr., accordingly).

The research of lipide composition of membranes thrombocytes at the sick calves has revealed decrease of the contents in its phospholipids up to 0,38±0,001 mcmole/10^9 thr., and increase of a level cholesterin up to 0,82±0,001 mcmole/10^9 thr. In the control the similar parameters have made 0,49±0,002 mcmole/10^9 thr. and 0,73±0,001mcmole/10^9 thr., accordingly. For the sick animals the intensifying thromboplastinoformation was marked. The time of formation active thromboplastin made 2,95±0,01mines., activity - 9,6±0,02 sec. In group of the control thromboplastin was formed for 2,40±0,01mines., and the activity made 14,0±0,05 sec.

All complex of biochemical changes in thrombocytes characterized hypermetabolism of arachidonic acid in its and increase thromboxanoformation. In simple sample of carrying the level thromboksan in platelets the calves is indirectly appreciated - 74,3±0,03 % (in the control - 39,2±0,02%). These parameters speak about activation cyclooxygenase, revealed on restoration AT in collagen - aspirinum sample - 96,8±0,05 % and thromboksansynthetase, detected on restoration AT in collagen - imidazole sample - 54,6±0,02 %, for healthy animals – 78,4±0,19 and 30,3±0,01 %, accordingly.

The quantity thrombocytes in blood of the patients was within the limits of norm. The acceleration AT was marked, especially under influence collagen - 25,3±0,20 sec. (control - 30,0±0,12sec.). A little bit more slowly AT developed at calves under influence ADP (33,0±0,12 sec.) and ristomycinum (26,2±0,13 sec.), in the control - 39,0±0,28 sec. and 41,0±0,26 sec., accordingly. Thrombinum and adrenalinum AT developed faster, than the control and were equal 42,4±0,11 sec. and 75,6±0,16 sec., accordingly ($P < 0,01$). The time of development AT under influence combined of application inductors also was accelerated. ADP+adrenaline адреналин - 20,0±0,12 sec., ADP+collagen - 18,0±0,09 sec., adrenaline+collagen - 20,3±0,07 sec.

Intravascular thrombocytes activity of the patients was characterized by its increase. Diskocytes in blood of the sick calves have made 62,0±0,20 % (in the control - 82,0±0,16 %). The quantity disko-echinocytes was increased (18,0±0,40 %). The contents spherocytes, spheroehinocytes and bipolar forms thrombocytes also considerably exceeded control parameters: 12,0±0,03 %, 6,0±0,02 % and 2,0±0,01 % accordingly The sum of the active forms thrombocytes of the patients was equal 38,0±0,30 %, the control - 18,0±0,20 %, small and large aggregates contained 15,2±0,06 and 4,7±0,03, in the control - 3,6±0,04 and 0,12±0,01, accordingly, at the same time the quantity thrombocytes in aggregates at the sick animals reached 14,6±0,02 %, against 5,0±0,20 % in the control.

Discussion

The current dyspepsia the calves carries complex character and is accompanied by development thrombocytopathy and activation of process of coagulation blood. Pathogeny of dyspepsia causes shifts in the ratio cholesterin/phospholipids into thrombocytes membranes, that in aggregate with infringements of digestion and adsorption the POL promotes to increase in current of blood, and then and in thrombocytes of the contents average molecules, causing easing antioxidantic of protection blood platelets and increase of concentration in them of primary and secondary products. In these conditions at calves there is an activation thrombocytes and thromboplastinoformation. The increase of thrombogenic potential of blood plasma for dyspepsia is connected first of all to activation platelet functions, instead of with increase of levels of the various factors of curtailing, including fibrinogenum. The activation fibrinoformation, undoubtedly having a place at dyspepsia, occurs first of all on a surface activated thrombocytes and carries always secondary character in relation to them adhesion and aggregation intensifying.

Set of metabolic infringements, change of structure of thrombocytes membranes, increase of the contents in them average molecules and intensifying intrathrombocyte the POL results in increase LAT, increasing the contents of the active forms of blood platelets in current of blood. High LAT causes aggregative activity of thrombocytes under influence various inductors intensifying. As possible mechanisms of this intensifying it is possible to consider activization of an exchange arachidonic acid with increase thromboxanoformation, registered in tests of carry and increase of concentration participating in process aggregation of Willebrand factor,

indirectly appreciated on acceleration AT with ristomycinum.

The research сочетанного of influence inductors on process AT at the sick calves has shown them interpotentiation action. The registration AT under influence of a combination two индукторов allows to come nearer to understanding of real conditions current of blood the animal with dyspepsia and testifies to expediency of purpose of the appropriate therapy capable to normalize hemorheology.

The revealed infringements thrombocyte hemostasis at calves with dyspepsia require adequate correction directed on break of „vicious circles", developing at dyspepsia.

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The summary

At newborn calves with dyspepsia the increase aggregative function of thrombocytes in vitro and in vivo is revealed. In a basis of these infringements the deep shifts of lipide structure of membranes thrombocytes, increase of the contents in plasma and in blood platelets of level average molecules, activation of peroxide oxidation of plasma lipids, intensifying of synthesis in a wall of vessels of Willebrand factor and intensification thromboxanoformation in blood platelets lay. The activation thromboplastinoformation is the conducting reason of increase of curtailing of blood at newborn calves with dyspepsia. The correction of infringements thrombocyte of a link hemostasis should include pathogeneticly the caused complex capable to reduce a level of average molecules in organism and to treat dyspepsia.

SMOOTH MYOCYTES IN THE AORTIC VALVE

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Condition of the problem.

The passive functioning, limiting of the retrograd blood flow and movements of the valves of heart by the gradient of blood pressure are accepted as correct. But the last years investigations call the rigidity of the same affirmations into question. Thus T.H. Williams & J.Y. Jew [3] have found the cardiomyocytes, smoth myocytes and interstitial cells and also nervous fibers in mitral valves of the rat's hearts. M. Cimini et al. [1] have described the smooth myocytes in semilunar valves of hearts of human