

Endogenous Intoxication and Microcirculation of Blood and Liver During Experimental Acute Intestinal Obstruction

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Abstract: In the article, in order to determine the level of acute endogenous poisoning, the amount of medium molecular peptides OMP in the blood serum was determined. In acute experiential intestinal obstruction of obturation and strangulation (AIDQ), AIDQ is accompanied by strong endogenous intoxication in the body, this process depends on the form of the disease and its time. After the factor is restored, the amount of OMP decreases in the obturation form, and increases even more in the strangulation form.

Purpose: 54 male rats weighing 160-200 g were used in the experiments. In recent years, the role of medium molecular weight peptides in the implementation of structural and functional changes in cells and their importance in the development of endotoxemia has been determined. In order to determine the membrane toxic effect of endotoxins of medium molecular weight, we determined their content in the blood serum of experimental animals using Gabriel's method. Thus, the degree of endotoxemia and microcirculation disorders determines the severity of the imbalance in the LPO/AOD system. In the obstructive form, the elimination of obstruction reduces the indicators of endotoxemia and microcirculation, and in the form of strangulation, they increase.

Keywords: bowel obstruction, liver microcirculation, endogenous intoxication.

Introduction

Acute intestinal obstruction (OKN) occupies a special place in the center of acute surgical diseases of abdominal organs and constitutes 99% (Kriger et al., 2001). Vpervye kompleksno provodat sravnitelnoe issledovanie mikrohemocirculyatornykh aspektov razvitiya patologicheskogo protesse v pecheni pri ostroy obturatsionnoy i stranguliatsionnoy kishechnoy improkodimosti. In the pathogenesis of acute intestinal obstruction (OKN), functional and structural changes in the liver occur. Nablyudaetsya poterya plazmy i erythrotsitov, toksicheskie produkti endotoxemii, poterya elektrolytov.

Tsel issledovaniya yavlyalos issledovanie vpervye kompleksno provodato sravnitelnoe issledovanie mikrohemocirculyatornykh aspektov razvitiya patologicheskogo protsesa v pecheni pri ostroy obturatsionnoy i stranguliatsionnoy kishechnoy improkodimosti.

Materials and methods of observation. V opytax ispolzovany 54 belyx besporodnyx krys-samtsov massoy 160-200 g. V poslednye gody vyyavlena rol srednomolekularnykh peptidov v realizatsii strukturno-funktsionalnykh izmeneniy v kletkax i ix roli v razvitii endotoxemii. Dlya vyasneniya membranotoksicheskogo deistviya endotoksinov sredney mokulyarnoy massy nami bylo opredeleno ix sodержanie v sorotke krovi eksperimentalnykh zivotnykh po metodu Gabrielyan. Provedenny issledovaniya showed the increase in the content of SMP kak pri dliny wavelny 254 nm, tak i pri 272 nm. Pri obturatsionnoy OKN uje s pervyx chasov experimenta sodержanie SMP, containing and not containing aromatic amino acids na 50 i 121 %, k 4 chasam experimenta na 70.9 i 210 % , cheraze 6 na 79.5 i 383 %, cheraze 12 na 87 i 315 %, cherez 24 na 100 i 343%.

Группа животных	СМП, нм			
	254		272	
	Контроль	Опытная	контроль	Опытная
2 часовая ОКН	0,301-+0,002	0,454-+0,002	0,119-+0,003	0,263-+0,003
		0,469-+,0003		0,268-+0,003
4 часовая ОКН	0,293-+0,001	0,501-+,0004	0,098-+0,004	0,402-+0,004
		0,513-+0,002		0,408-+0,003
6 часовая ОКН	0,288-+0,003	0,517-+0,008	0,090-+0,008	0,435-+0,008
		0,560-+0,006		0,456-+0,004
12 часовая ОКН	0,286-+0,002	0,535-+0,003	0,088-+0,002	0,454-+0,003
		0,600-+0,004		0,494-+0,003
24 часовая ОКН	0,280-+0,008	0,561-+0,012	0,086-+0,007	0,467-+0,002
		0,612-+0,006		0,488-+0,013

In the strangulation form of OKN, the change due to the change is more pronounced, the static values above the control indicators are 55 and 125% for 2 cups, 75 and 216% for 4 cups, 94.4 and 306% for 6, and 109 and 361 % - for 12 cells, not 118 and 367 % - for 24 cells post production model, sootvetstvenno pri 232 and 272 nm dlin wave.

After the elimination of obstruction, the level of SMP at the obturation OKN decreases to 0.461-+0.002 and 0.0388-+0.009 usl.ed. However, compared to the mean of the control group of animals, the mean value is significantly higher than the control by 57 and 171%. V dalneyshim pokaseteli SMP stepenno snijalis po atnosheniyam k parameters krysa ne stranenny OKN i k konsu experimenta k znacheniyam kontrolnykh zivotnykh. Pri strangulyatsionnoy OKN, there is a gradual increase in the content of SMP at a wavelength of 254 nm, and a significant change is observed at the wavelength of 272 nm. At the same time, the control parameters of the SMP, which are more pronounced at the wavelength of 272 nm, were carefully determined. At the same time, a high value of SMP was preserved for strangulation OKN, exceeding the parameters of the control group by 78.8 and 339%, amounting to 0.527-+0.007 and 0.431-+0.011 usl.ed., respectively, after 2 weeks of elimination.

In such a way, conducted research shows that OKN occurs with oral development of endogenous intoxication in the organism. In strangulation OKN, the degree of endogenous intoxication is more pronounced.

The experiment was carried out in 2 directions: in the first one, microhemocirculation (MGTs) was developed, and acute intestinal obstruction (OKN) was reproducible in animals with obturational variants by means of transection of the small intestine in the middle third, and in the second series, a high-performance parameter was sought. krysa so strangulyatsiey OKN, kogda uchastok kishchnika perevazyvali vkupe s prilegayushchim otdelom brijeki. Cherez 6, 12, 24 and 48 chasov posle nalozheniya ligatury zivotnykh vyvodili iz opytov.

Sostoyanie MGTs oven otsenivali po dannym vitalnoy mikroskopii organa na luminescentnom mikroskope "LYuMAM-IZ" (St. Petersburg. Russia) s ispolzovaniem contactnogo ektiviva. Issledovanie provodili pod obshchim thiopentalovym narcozom.

V kachestve kontrolya slujili dannye lojnooperirovannykh zivotnykh. V obshchey slojnosti podopytnye zivotnye byli divided into following groups: I – intact; II-control; III – the experimental group with obturating OKN corresponding to the duration of induction 6, 12, 24, 48 hours and the IV group – analogous periods with strangulating OKN.

Microhemocirculation test.

Pri luminestsentnoy biomikroskopii tkan pecheni intaktnyx zivotnykh predstavlyaetsya zelenovato-goluboy, a suduy imeyut temnyy ottenok. In the hepatic tissue, portal veins and portal venules are clearly visible, which are radiating sinusoids, often branching and anastomosing. Sinusoidy predstavlyayut soboy smoothkostennye, often branchvyashchiesya cilindroobraznye tubki, korost

krovotoka v nix strongly variruet. It is sinusoidal, located in the center, and the blood flow is more intensive compared to the blood flow in the periphery. Naryadu s deystvuyushchimi sinusoidami v parenkhima pecheni opredlyatsya neznachitelnoe kolichestvo nefunktsioniruyushchix sinusoidov, kak rulek, raspolozhennyx po periferii dolek. Pered vpadeniem sinusoidov v terminalnuyu pechenchnuyu venulu, kotoroe proishodit pod priamym oglom ili bilkim k takovomu, v bolshinstve sluchaev otmechaetsya suzhenie lumen sinusoida. Eto lishniy raz podtverzdaet nalichie sphincterov, regulating current blood. Terminal hepatic venules, which enter sinusoids, have a form that is close to cylindrical or tree-like, and at the end enter 2-3 collecting venules.

Lojnooperirovannye zivotnye podvizhnye, na kormlenie reagiruyut po-prejnemu. The post-operative wound is dry, life is not breathing. Macroscopic abdominal cavity and imaging pathological features are not revealed. In the biomicroscopy of the furnace, 2 cups of blood were detected in the nachala opytov nablyudalos neznachitelnoe expansion of portalnyx venul, sinusoidov and central sobiratelnyx venul and nekotorye zamedlenie krovotoka po sravneniyu s pokazatelyami intactnoy grupy zivotnyx. V dalneyshem (through 6-12 hours), blood vessel clearance and blood flow are normalized, which shows soboy practical recovery of hemodynamics. The basic group of animals after anesthesia and operative intervention (anesthesia, laparotomy and suturing of the abdominal wall for the reproduction of the model of obturation and strangulation of OKN) is treated and conscious for 20-25 minutes. Pri etom zivotnye malopodvijnye, pishchu ne prinimayut, vialye, u krysa so strangulyatsionnoy OKH zivot vzdut. The reaction is zivotnykh na vneshnie razraziteli slabaya.

In the group of rats with obturational form of OKH after 2 cups after reproduction, the animals are malopodvijnye, they do not accept and quickly react to hexanal narcosis. Pri vskrytii bryushnoy polasti jeludok umerenno polnen, na meste neprohodimosti stenki kishechnika nablyudaetsya weaky otek, privodyashchichi dedel kishechnika also moderately rasshiren v otlichie ot otvodyashchego fat, pechen ne elichena v razakh, soft consistency, svetlo-korichnevogo otenka, kraya ostrye.

Pri biomikroskopii pecheni opredelyalis moderate vasodilatation initiation mejsinusoidalnyx anastomozov (MSA), neznachitelnoe snizhenie skorosti krovotoka. Pri obzornom prosmotre pathological osobennostey and parenchyma net. Kontury sosudov vyrazitelny. V otlichie ot obturatsionnoy OKH, zivotnye so strangulyatsionnoyformoy bily znachitelno zatormozheny, malopodvijny, zivot silno vdut. Pri laparotomii otmechaetsya v nalichii nebolshoy volume serozno-hemorragicheskogo vypota, uchastok kishki vmeste s bryejkoy otyochen s yavnym hemorrhagicheskim sekretom, jeludok napolnen, kishechnik do mesta strangulyatsii rasshiren, otvodyashchie otdely zko spavshie, pechen umerenno zastoynaya, poverkhnost smoothkaya.

In the biomicroscopy, the vascular picture is strengthened, MSA is activated, the peripheral blood vessels are dilated, izvilistye, hyperaggregation of formennyx elements, blood flow is slowed down. V to je vremya tsentralnye sobiratelnye venuly bez osobennostey, krovotok v nix preryvistyy separirovanny za schet agregatsii formennyx elementov. Kontury sosudov horosho kontrastiruyut. And the parenchyma gland is pathologically included.

Cherez 4 chasa experimenta s obturatsionnoy OKH, zivotnye ostavalis malopodvijnymi, pishchu ne prinimali. At laparotomy, the oven is not enlarged in size, the consistency is soft, the edges are smooth, sharp. The stomach is full, the driver's seat is full, and the stomach is full. Microscopically: intensification of the blood flow in the MSA, non-sustaining expansion of the tsentralnyx sobiratelnyx venul, odnako, blood flow and nix zamedlen. Otmechaetsya aggregation formennyx elementov krovi.

V etom je stroke, no v gruppe krysa so strangulyatsionnoy OKH zivotnye rezko zatormozheny, zivot znachitelno vzdut. Postoperative wound swelling. Pri laparotomii iz bryushnoy polosti vydelyaetsya temnogotsveta hemorrhagicheskaya jidkost. Uchastok kishechnika so strangulyatsiey rezko rasshiren, s obshirnymi krovoizliyaniami i yavnymi priznakami plasmaticeskogo propityvaniya stenki sosudov. Vokrug strangulyatsii blizlejashchie obrazovaniya spayany drug s drugom i s yavnym fibrinoznym naletom. Stomach and privodyashchee kono kishechnika sharp rasshireny. In biomicroscopy: expressed vasodilatation with severe perivascular edema and section of diapedeznykh krovoizlianiy.

When looking at the viewer, you can see the mosaicism of MGTs-pain due to the increased number of obliterated microvessels, weak vascularized zone and focal changes in the zone. V gruppe s 6 chasovoy obturatsionnoy OKH v otlichie ot predydushchih srokov experimenta povedenie jivotnykh inaduateno, pishchu ne primimayut, jivot umerenno vzdut. Pri vskrytii otmechaetsya vzdutost zhudka. Na meste neprohodimosti otmechaetsya uvelichenie privodyashchego otdela kishechnika po sravneniyu s otvodyashchim. Baked bread, brownish shade.

Results and discussions. When biomicroscopy, blood filling phenomena are noted, which have the nature of venous stagnation with vasodilation. The hepatic venules became full-blooded, dilated with a pendular movement of blood. In addition, there are rare empty sinusoids, which, in turn, alternate with dilated, blood-filled capillaries. Presinusoidal edema is noted. This phenomenon is especially pronounced in the center of the lobules, which is microscopically characterized by blurring of the boundaries of the vessels. There is an expansion of the central collecting venules, the blood flow in them is slowed down and aggregation of blood cells is noted.

Conclusions: Thus, the degree of disturbance of endotoxemia and microcirculation determines the severity of the imbalance in the LPO/AOP system. Elimination of obstruction in the obstructive form reduces the indicators of endotoxemia and microcirculation, while in the strangulation form they become even more aggravated without hospitalization

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