

Serum phospholipids in differential diagnostics of salmonellosis and noninfection toxic gastroenteritis

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Introduction

In modern time salmonellosis infection are one of major problems of preservation of health on the world [1,]. In opinion J.Rieder et al. (2015), salmonellas are the most widespread reason of food infections [3]. Besides infectious etiology, the reason of gastroenteritis can be toxic influence of alcohol [4,5].

The persons with similar symptomatic quite often after the frequent use of toxic alcohol in holidays get in infectious hospital, where differential diagnostics intestinal infections with gastroenteritic syndrome and acute alcoholic gastroenteritis represents the certain difficulties.

Complexity and the variety of mechanisms underlying various diarrheas, dictates necessity of differential approach to their diagnostics and realization of treatment of the patients in view of pathogenetic features and clinical current of illness in each concrete case.

The lipids as one of major making all cells of a human organism are considered. In composition of cell-like diaphragms, the phospholipids cause their permeability, thus provide normal processes of exchange in various organs [6, 7]. Participating in support of integrity of a structure of diaphragms, the phospholipids support many functions of cells.

The purpose of investigation was development of a new way of differential diagnostics salmonellosis gastroenteritis and noninfection toxic alcoholic gastroenteritis on a basis of blood serum phospholipid spectrum.

Materials and methods

The contents of serum phospholipids for 50 patients with salmonellosis (S. Enteritidis) and 50 patients with toxic gas-

troenteritis connected with alcohol abusing were researched [8]. All inspected persons were at the age from 25 till 55 years.

All patients with toxic gastroenteritis (K 52.1) arrived in a hospital after considerable alcoholic load, were ill acutely and negated presence of chronic diseases of gastrointestinal tract. The group included only the patients with negative results of inspection for intestinal infections.

The serum lipid spectrum by method V.K. Makarov et al. was detected with definition of percentage separate lipid fractions densitometrically with usage of densitometer Shimadzu CS - 9000. The following fractions of phospholipids entered into composition of lipidogram: common phospholipids (FL) - lisophospholipids (LPL), sphingomyelin (SM), phosphatidilholin (FH), (FE) was investigated. The outcomes of a contents of each lipid expressed in percentage, concerning a level of common phospholipid. The matching of groups was carried out with application of a computer program Biostat.

Outcomes and their arguing

Research of common phospholipids spectrum of (tabl. 1) has shown, that for patients with salmonellosis gastroenteritis in comparison with the healthy persons the relative level of phosphatidilholin with parallel lowering of a contents lisophospholipids was considerably boosted. In comparison with the healthy persons for the patients with toxic gastroenteritis metrics of lisophospholipids and phosphatidilhalamin were above, and ΦX - is lower.

The matching of phospholipids spectrum patients with salmonellosis gastroenteritis and toxic gastroenteritis has revealed, that in the blood of whey the lisophospholipids and phosphatidilhalamin contents authentically considerably were higher, and phosphatidilholin - was lower.

Table 1. The characteristic of blood phospholipid composition for the healthy persons, patients with salmonellosis gastroenteritis and patients with toxic alcoholic gastroenteritis

PHOSPHO-LIPIDS	Meaning of phospholipids ($M \pm m$) in relative %			P_1	P_2
	Healthy persons (n – 50)	Patients with salmonellosis gastroenteritis (n – 50)	Patients with toxic alcoholic gastroenteritis (n – 50)		
LPL	27,5±0,8	15,0±0,5	30,3±0,7 ²	<0,001	<0,001
SM	24,3±0,4	25,3±0,4	24,0±0,5	<0,05	>0,05
FH	37,5±0,7	49,1±0,7	32,4±1,0 ³	<0,001	<0,001
FE	10,2±0,4	10,4±0,4	12,9±0,3 ³	<0,001	>0,05

Note:

P_1 - reliability of distinctions of lipids metrics for the patients with salmonellosis gastroenteritis and toxic alcoholic gastroenteritis;

P_2 - reliability of distinctions of lipids metrics for the patients with salmonellosis gastroenteritis in relation to the healthy persons;

1, 2, 3 - reliability of distinctions of lipids metrics for the patients with toxic alcoholic gastroenteritis and healthy persons (1- $p < 0,05$, 2- $p < 0,01$, 3- $p < 0,001$).

The abundance sphingomyelin in groups of the patients with salmonellosis gastroenteritis and toxic gastroenteritis in comparison with the healthy persons did not differ.

The amount of lisophospholipids in blood for the patients with toxic gastroenteritis in 2 times was significant then a contents of the given fraction for the patients with salmonellosis gastroenteritis.

The low lipophilic level at patients with salmonellosis gastroenteritis can be as a result of inhibition endogenous phospholipase activity, violations of reassembling processes, that carries on to accumulation of these lipids on biologic membranes [10]. It is possible to explain increase of a relative level of blood lipophilic at patients with toxic gastroenteritis by activation phospholipase A₂, which catalyzes hydrolysis of glycerophospholipids etherous link, therefore will be derivated lipophilic [11].

For the patients with toxic alcoholic gastroenteritis the rather low abundance phosphatidilholin was detected. Under operation of alcohol the activity of an enzyme phosphatidiletanolmetittransferase was reduced, that leads to lowering abundance phosphatidilholin [12]. Besides in blood for the persons with chronic alcoholic intoxication the rise of a level phosphatidiletanolamine was observed [13].

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Conclusions

Phospholipid spectrum of blood can be used for differential diagnostics between salmonellosis and toxic alcoholic gastroenteritis.

The lipids metabolism changes at the given pathological states carry out different character. So, salmonellosis gastroenteritis is characterized by lowering, in comparison with norm, abundance lipophilic and rise phosphatidilholine. Toxic alcoholic gastroenteritis, on the contrary, rise of abundance lipophilic, phosphatidiletanolamin and lowering phosphatidilholin.

The contents blood lipophilic lower than 35 % or 30,0 mg % allows diagnosing toxic alcoholic gastroenteritis. The contents blood phosphatidilholine higher than 40 % or 50 mg % allows diagnosing salmonellosis gastroenteritis. The patent of Russian Federation for the invention № 2499992.