

MACRO- ST-EMIA: LITERATURE REVIEW AND CLINICAL CASE

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W. Shakespeare, «Hamlet»

Key words: macroenzimemia, macro-AST-emia, pathogenesis, diagnostics, differential diagnostics

Macroenzimemia is a very rare and difficult for the differential diagnosis of a condition in which the aggregation of the molecules of an enzyme with immunoglobulins or non-protein substances. There was described the clinical observation of macro-CK-emii, the macro-LDH-emia, the macro-GGT-emii, macroamilazemia, macrolipazemia. Blood circulates macro alkaline phosphatase described rarely. Other types of macroenzimemia diagnosed even more rarely. These macroenzimemia, although rare, difficult to diagnosis and differential diagnosis, but when establishing a correct diagnosis indicate no need for further numerous diagnostic and therapeutic action. So, macroamilazemia creates the illusion of pancreatic disease, some other macroenzimemia - the illusion of liver disease.

More thoroughly studied macroamilazemia, which is dedicated to a number of publications, including our detailed review of the literature, less information about other macroenzimemiyah, such as macro-AST-emia. The literature of the latter state are reduced to a description of some clinical observations.

The frequency of macro-AST-emia not been studied as the correct diagnosis in most cases, do not install. According to the major centers of the frequency of this condition is 13,1-60,0% in adults [20, 27] and 38.6% among children. But these figures refer to the frequency of macro-AST-emia in patients with isolated increased AST [12]. Some idea of the frequency of macro-AST-emia give results Mayo Clinic (USA). During the period from 1986 to 1990 macroenzimems diagnosed 42 cases, of which 21 patients identified macro-CK-emia, and 10 - macro-LDH-emia, in 6 - macro-AST-emia and 5 - macroamilazemia.

Macro-AST-emia compounds formed as a result of AST with immunoglobulins or other molecules. In these cases, the possible role of autoimmune mechanisms, when AST is playing the role of "target" for the immunoglobulin molecule similarity with AST with any antigen (molecular

mimicry). As a rule, there is the aggregation of AST with IgG [3, 6, 23, 31], but there can be exceptions. Thus, M. Nagamine et al. (1983) [22] published a clinical observation patient with lung cancer and macro-AST-emia whose AST was associated with IgG and IgA. Moreover, IgG were associated with the cytoplasmic fraction AST and IgA - and the cytoplasmic and mitochondrial fractions with ACT.

This version of the macro-AST-emia (complexing with immunoglobulins ACT) refer to as I type. In type II macro-ACT is generated due to polymerization of the enzyme or other non-proteinaceous binding agents, preferably with drugs which are administered intravenously, such as hydroxyethyl starch.

In any case, the macro-AST accumulates in the blood as renal clearance of such large molecules dramatically reduced. This creates a false impression about the rise of enzyme activity due to diseases of the liver, heart, muscles, and so on. It is no accident macro-AST-emia is included in algorithms for differential diagnosis in an isolated asymptomatic transaminase rise.

Macro-AST-emiya can be diagnosed in healthy may be associated with autoimmune diseases - [rheumatoid arthritis], gamma monoclonal patiey and other disorders with celiac disease, with cardiovascular disease in the elderly with malignant tumors, with specific immunotherapy with sepsis.

The second group of diseases associated with the macro-AST-emia is liver disease: chronic hepatitis C, the period of recovery after acute hepatitis C infection, cryptogenic chronic hepatitis. However, macro-AST-emiya is not considered the result of liver disease, but only comorbid conditions, it is extremely difficult diagnosis and differential diagnosis. Similarly interpret macroamilazemia combination with pancreatitis.

The hereditary origin of macro-AST-emia is not proven. Described only one case where the mother with the macro-AST-emia a healthy baby, but at the age of two months he has formed a macro-AST-emiya.

Several methods were developed to detect macroenzymes in the blood. All are based on a particular molecule macroenzymes difference from conventional enzyme molecules. Some of these methods are direct, as set by their presence in the blood enzyme complex having a much higher molecular weight than the normal enzyme molecule based on the separation of serum proteins by molecular weight. Other methods are indirect, as they macroenzymes confirm the presence in the blood by detecting the complex of the enzyme, and based on the identification of any of its properties. Direct tests are of greater diagnostic value and entail fewer technical and diagnostic errors.

For diagnosis macroenzimemia, fo instance macroamilazemia using column, fast liquid, thin layer chromatography, ultracentrifugation, electrophoresis, isoelectric focusing, polyethylene glycol precipitation, thermal sensitivity evaluation amylase immunological methods (reaction with

monoclonal antibodies, using antisera to immunoglobulin components macroamylase complex). Most of these methods are simple and rapid electrophoresis test with polyethylene glycol.

Macro-AST-emia is a benign condition, which has a long asymptomatic for many years. ACT indicators are consistently high or vary dramatically from to moderately elevated, can also spontaneously normalized. A case of reducing the level of macro-AST failure patient from alcohol. S. Goenner et al. (1998) described the disappearance of macro-AST-emia in a patient with chronic active hepatitis after liver transplantation.

Macro-AST-emia in treatment is not needed. Especially since the methods of separation of macro AST-complexes are currently not known. We present the case of their own observation of macro-AST-emia.

Patient D., 64, an economist by profession (currently not working), was admitted for diagnosis and correct treatment at the clinic of internal medicine by professor A.J. Gubergrits Donetsk National Medical University.

On admission complained of discomfort in the lower abdomen, which is associated with the violation of the frequency and form of stool, constipation (stool 1 every 2-4 days), about which the positive effect of taking various laxatives. Periodically at errors in the diet (eating fatty, fried food) notes in the right upper quadrant discomfort, belching, nausea, bitter taste in the mouth in the morning. She has shortness of breath that occurs during exercise, stress. The body temperature is normal. Weight is stable.

History of disease. She has considered herself a patient since 2008, when she first began to have trouble with constipation. She asked the therapist in the community. On examination it was found elevated AST and 4.6 normal range - 135 U / L (N - 0-29 U / L) and ALT levels to the normal range 3 - 93 U / L (N - 0-31 U / L), which patient associated with the uncertainty in the diet the day before. She was examined for markers of hepatitis viruses B and C - the result is negative. The patient was recommended acceptance Lipitor (for 1 month), against which, according to the patient, normalization of transaminases.

In October 2009, in connection with dyspnoea, pain in the chest turned to an endocrinologist, who observed about autoimmune thyroiditis with 1995 Made dopplerEchocardiography: cavities of the heart are not expanded, not thickened myocardium. Global contractile function is not compromised. Signs of diastolic dysfunction of the left ventricle of type I. Seal the wall of the aorta, the aortic and mitral valves. In March 2010 again was revealed increase of AST to 42 U / l (1.5 norm) with normal ALT (17 U / l), and in June - ALT increased to 103 U / l (3.3 to norms) with normal AST (17 U / l). In August 2010, in connection with the bitterness that appears in the mouth, belching, constipation, increase in the size of the neck was admitted to the medical ward of the city hospital number 5 in Donetsk. On examination it was found to have elevated AST to 282 U / L (9.7 rules), and total cholesterol to 7.72 mmol / L (N - 3,08-5,25 mmol / l), normal levels of ALT,

bilirubin, lipoproteins very low density, triglycerides, creatinine. When diagnosed with sigmoidoscopy catarrhal proctitis, external and internal hemorrhoids, sphincter was examined. The diagnosis: chronic cryptogenic hepatitis, chronic enterocolitis, mainly affecting the large intestine. Prescribed treatment: SAME, Espa-lipon, Ursosalk, Beefy-forms, Laktuvit, Livonorm, against which the ACT decreased to 153.3 U / l. The patient was advised to continue taking ursosalk for 1 mon. At inspection in November 2010 found increased AST to 426 U / L (up to 14.7 standards); proteinogram and other biochemical parameters of blood in the normal range Antinuclear factor found in titer of 1:100; mitochondrial antibodies, antibodies to liver microsomes, kidney and smooth muscle were not found.

At fibrogastroscopy: normal endoscopic picture of the esophagus, submucosal gastric subcardial education, focal atrophic gastritis, duodenitis surface, urease test is negative. Biopsy of formation in the stomach in the biopsy pieces of surface sections of the gastric mucosa with the picture of chronic gastritis with moderate inflammatory infiltration, mild activity expressed intestinal metaplasia cover-pit epithelium; urease test "+". Scintigraphy performed liver: The liver of normal shape with a good concentration of the radiopharmaceutical and its relatively uniform distribution, the spleen is not enlarged, normally absorbs radiocolloid. There are no scintigraphic signs of liver damage. The patient was recommended SAME 400 mg / day / jet number 10, followed by 1 tablet 2 times a day for one month, after which AST decreased to 100 U / l. In January 2011, the re-examination: AST - 185 U / L (6N), ALT - 15 U / L, thyroid-stimulating hormone - 4.26 mkME / ml (N - 0,27-4,20 mkME / ml) antibodies to thyroid peroxidase - 495.4 IU / ml (N - 0-63 IU / mL). The patient was recommended acceptance Livonorm 1 tablet 2-3 times a day. Consult an endocrinologist, adjusted dose of L-thyroxine.

In February 2011, again was an increase in AST to 883 U / L (up to 30 rules) with normal ALT levels. Made FibroMax test: FibroTest - 0,13 (F0); ActiTest - 0,03 (A0); SteatoTest - 0,16 (S0); NASHTest - 0,25 (N0); AshTest - 0,97 (H3). Admitted to a medical ward with a diagnosis of cryptogenic chronic hepatitis with severe biochemical activity, autoimmune thyroiditis. The department received SAME, Espa-lipon, after which AST decreased to 3 standards.

With control of biochemical blood analysis re-raising ACT in April 2011 to 374 U / L (13 standards), in May 2011 to 417.64 U / L (14 standards) and in September 2011 to 444 IU / l (15 standards) with the maximum values of ALT to 37.5 U / l. During this period, the patient did not receive drug therapy.

In September 2011 she was appointed SAME, 800 mg / jet number 10, followed by 1 tablet 2 times a day with no effect (during the examination at the end of October 2011 remained AST increase to 485 U / L - 17 standards). For the diagnosis and correction of treatment hospitalized in the internal medicine clinic Professor A.J. Gubergrits Donetsk National Medical University.

Life history: tuberculosis, typhus, malaria, viral hepatitis, sexually transmitted diseases, dysentery, blood transfusion $\frac{3}{4}$ denies. Surgical intervention was not. In epidemiologically disadvantaged areas in the last 5 years did not go out. Allergic history: intolerance citrus fruits, strawberries, honey, hay fever. Family history: her mother has stomach ulcer. Since 1995 there has been an endocrinologist at the autoimmune thyroiditis.

Objective data. Overall condition is relatively satisfactory. Conscious, adequate, fully oriented. Adequate nutrition. Skin and visible mucous membranes of normal color. Peripheral lymph nodes were not enlarged. Thyroid palpation softelastic consistency, increased in size to Article II., Painless. Percussion over the lungs is clear lung sounds. Auscultation of vesicular breathing has no wheezing. Border of the relative dullness of the heart is not enlarged, the tones of sufficient volume. Regular rhythm, pulse 78 beats. / Min., Satisfactory properties. Blood pressure 140/90 mm Hg. Art. Tongue moist, slightly coated with gray bloom. Abdominal palpation of the surface is soft and painless. With deep palpation sensitivity in the epigastric region, in the projection of the gall bladder. The segments of the colon spasmatic. Liver at the costal margin, palpation it was normal. The spleen and kidneys were not palpable. Peripheral edema is absent.

These laboratory and instrumental examination, expert advice at the moment (May 2012). Common blood and urine tests, scatological study - normal.

Biochemical analysis of blood: AST - 485 U / L - up to 13 rules (N - 3-37 U / L), ALT - 17.4 U / L (N - 3-45 U / L), total bilirubin - 6.2 mol / l (N - to 17.0 mmol / l), direct - 1.78 mol / l (N - 0-3,4 mol / l), cholesterol - 7.28 mmol / l (N - up to 5, 2 mmol / l) triglycerides - 1.07 mmol / l (N - up to 2.3 mmol / l), glucose - 6.02 mmol / l (N - 3,88-6,38 mmol / l) GGT - 10 U / L (N - 6,0-42,0 U / l) alkaline Phosphatase - 80 U / L (N - 35,0-104,0 U / l α), 2-macroglobulin - 2.77 g / l (N - 1,3-3,0 g / l), haptoglobin - 1.81 g / L (N - 0,3-2,0 g / l), apolipoprotein A1 - 1.64 g / l (N - 1,08-2,25 g / l), LDH - 152 U / L (N - 135-214 U / l), myoglobin levels - 49 g / L (N - 85 mg / l) blood iron - 14.8 pmol / l (N - 7,16-26,9 mol / l), ferritin - 14.2 g / l (N - 10,0-300,0 g / l α), 1 - antitrypsin - 1.5 g / L (N - 0,90-2,00 g / l), pancreatic isoamylase - 77.9 U / L (N - 22,0-80,0 U / l) lipase - 47 2 U / L (N - 13,0-60,0 U / l) urea - 6.17 mmol / l (N - 2,0-8,0 mmol / l), creatinine - 69.1 mmol / l (N - 53,0-115,0 mmol / l).

In the study found Revmoproby rheumatoid factor "+", C-reactive protein "+" increasing to 0.35 from seromuroid. e (N - 0,13-0,20 y. F.). UFC on repeated control in the normal range.

In immunological marked increase in the number of circulating immune complexes to 130 U / ml (N - 100 U / ml). Markers of hepatitis viruses B and C (eg PCR) - negative. Anti-CMV IgG - 97,5 U / ml (N <3 U / ml) Anti-CMV IgM and negative CMV-DNA.

Tumor markers CEA, CA 19-9, a-fetoprotein are normal.

Antinuclear, mitochondrial antibodies, antibodies to liver and kidney microsomes and gliadin – normal credits. In the study of thyroid hormone marked increase in thyroid-stimulating hormone to 4.34 mkME / ml and anti-thyroid peroxidase to 704.2 IU / ml.

Deposition of AST blood polyethylene glycol - 82% (normal - up to 73%). This result with a probability of more than 90% indicates the macro-AST-emia.

Fibrogastroduodenoscopy: normal endoscopic picture of the esophagus, submucosal formation of subcardial in the stomach up to 1 cm in diameter, with a smooth surface, pink, soft consistency at palpation tool that requires morphological evaluation; superficial gastritis, urease test is weakly positive (+); surface duodenitis. Biopsy of formation in the stomach. In biopsy: chronic gastritis, gastric cardia, a moderate degree of activity with hyperplasia cover-pit epithelium, with focal colonic metaplasia; limfogistioplazmotsitarn moderate focal infiltration of the mucous layer, secretory activity focally reduced; Helicobacter pylori - negative test.

Ultrasound examination of the abdomen: liver and spleen were no pathological changes, mild diffuse changes of the pancreas, echosigns chronic cholecystitis. Barium enema: organic changes are detected.

Computed tomography of the abdomen with contrast-per os: hiatal hernia, mild diffuse changes in liver structure on the lesser curvature of the stomach, assessed morphologically.

Needle biopsy of the liver. In severe liver hydropic degeneration of hepatocytes, mainly in the center of the lobules - including necrosis, apoptosis of individual cells, cholestasis, sparse inflammatory infiltration (single lymphocytes in the portal tracts and within the lobules). In the center of the lobules cholestasis along the bile pole of hepatocytes, which is typical of Dubin-Johnson syndrome. Conclusions: The most likely hepatotoxicity, Dubin-Johnson syndrome.

Electrocardiogram: sinus rhythm, regular, heart rate - 78 u. / Min., The normal position of the electrical axis of the heart, strengthening the bioelectric activity of the left ventricle, moderate early ventricular repolarization syndrome.

She was consulted by cardiologist. The diagnosis: coronary artery disease atherosclerotic cardio sclerosis, atherosclerosis, aortic arch, hyperlipidemia, heart failure I. Given the detection of rheumatoid factor in the blood (+), C-reactive protein (+) and increase seromuroid, is recommended to control of the dynamics. Convincing explanation of the cardiovascular system is so high there is no increased AST. Subsequently, it is advisable to return to the question of lipid-lowering therapy.

Infectious disease consultation. The presence of positive IgG antibodies with negative IgM and CMV DNA is seen as carriers of cytomegalovirus infection. In a particular treatment does not require.

Consultation of endocrinologist. Hashimoto's thyroiditis. Hypothyroidism, mild, subindemnification.

Clinical Diagnosis

Basic: Chronic hepatitis activity with minimal morphological likely toxic (drug). Dubin-Johnson syndrome.

Collateral: chronic superficial gastritis.
Helicobacter pylori - Neg.
GERD: hiatal hernia.
Chronic cholecystitis under unstable remission.
IBS with constipation.
Hashimoto's thyroiditis. Hypothyroidism, mild, subindemnification.
Macro-AST-emia.
Ischemic heart disease: an atherosclerotic cardio sclerosis, atherosclerosis, aortic arch, hyperlipidemia, CN I.

Assigned treatment: Gepazil kompozitum 1 ampoule per day number 30 then Gepazil 2 1 capsule twice a day for one month; De Nol 120 mg four times a day for 4 weeks.

Recommended control fibrogastrocopy; AST in the dynamics of (1 every 6 months).

Of course, the macro-AST-emia, diagnosed in our patient - is merely the result of another disease. We were not able to completely understand the reason, but only found a rare biochemical phenomenon. Of course, we will continue to observe the patient. And now need to agree with the well-known Russian surgeon A.T. Lidskiy: "We must abandon the endless variety of surveys and in pursuit of a precise anatomical diagnosis. There is a limit of doubt in the diagnosis ... very frequent situations where the physician must admit that there are limits diagnostics».

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Macro- ST-emia: literature review and clinical case

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In the article a literature review about very rare state — macro-AST-emia, is presented. There are detailed information about pathogenesis and diagnostics of this biochemical feature. The authors also described the clinical case of macro-AST-emia.