

# CHANGES IN MEDULLARY IMAGE, LIEN AND DEAD LYMPH NODES FROM ALCOHOLIC INTOXICATION

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Objective evaluation of intoxication in instances of dead bodies medico-legal investigation is a responsible expert action, essentially affecting following decisions of law machinery.

At present time medicolegal investigation of different intoxications is based on the results of toxic quantitation in dead bodies biological fluids. However, it is commonly supposed that structural intoxication signs which are disclosed in postmortal period are nonspecific in practice of legal experts. Although in many cases the objective evaluation of intoxication from quantitation results of toxic derivative in biological fluids are questionable considering long period of transportation and location of dead body in adverse condition. Thus, there are special difficulties of medicolegal objective evaluation of intoxication that do not meet inquisitorial-law machinery, medicolegal investigation's requirements.

Alcohol intoxication is one of the most frequently met types of intoxication in medicolegal practice. According to toxicological classification grain alcohol, monoatomic alcohol are referred to acyclic narcotic toxic. It should be noted that the majority of alcohol, grain alcohol could be found in colouring materials, acetone, methyl alcohol. All these admixture can substantially raise alcohol toxicity therefore alcohol quantitation only in blood or urine are not sufficient for objective evaluation of the alcohol intoxication level intensity. Besides, it should be not overlooked that such factors as time limitation of death, death causes accompanying diseases and other factors affect the quality of alcohol intoxication investigation. Consequently, the search and development of the objective methods of the improvement of alcohol intoxication degree in medicolegal investigation is the urgent problem in legal toxicology, thanatology and histology. One of the organism's system that quick-responses to external and internal environment is the hematoses system. Up to date structural changes in bone marrow, lien, lymph nodes and the degree of informativeness for their alcohol intoxication degree diagnostics are not studied.

From the abovementioned the goal of our research was the investigation and evaluation of the diagnostic meaning of pathomorphological changes in bone marrow, lien and dead lymph nodes from alcohol intoxication.

The tela of bone marrow, lien and lymph nodes mediastinal of 34 dead bodies (deceased in 2005-2007 y. at home and medical institutions) served as the

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material of the research. The process of collection the materials for the investigation was carried out by the following factors: the time from the moment of death to the moment of thanatopsy 4-24 hours; the age of deceased 14-65 (the difference in sex was not made); the quantitation of alcohol in blood from 0,4 to 6 per mille; the time of being at day and night clinic not more than 1day.

The material under investigation was divided into 3 groups:

1. the first group – bone marrow, lien and lymph nodes mediastinal of deceased from alcohol intoxication without anamnestic changes and typical changes specific to chronic alcohol intoxication (14 cases);
2. the second group – bone marrow, lien and lymph nodes mediastinal of deceased from acute alcohol intoxication against anamnestic and typical changes specific to chronic alcohol intoxication, identified as signs of chronic alcoholism – (10 cases).
3. the third group, control group – bone marrow, lien and lymph nodes mediastinal of 10 people, deceased of sudden death from mechanical asphyxia or permanent injury of skull.

Histologic and cytometry investigation of bone marrow, lien and lymph nodes mediastinal were carried out. Sampling, anchorage, laying, carving and colouring of the morphological material were processed by standard methods. Cellules quantitation of bone marrow, lien and lymph nodes mediastinal were carried out in 10 arbitrary visual fields on 1000 cellules under immersion microscopy, ocular lens x40. From the investigation we chose the following cell lines: erythroblasts, erythrocytes, megalokaryocytes, fat cells. These formed elements of bone marrow are less subjected to autolytic changes in postmortal period. In lien – the general cellularity in 10 visual fields, the total quantity of responsive focus's follicles in visual field, the total quantity of morphologically differentiated cellules, the quantity of macrofactors in responsive focuses. In lymph nodes mediastinal – the general cellularity in 10 visual fields, the total quantity of responsive focus's follicles in visual field, the total quantity of morphologically differentiated cellules, the quantity of macrofactors in responsive focuses.

In the process of investigation we came to the following results.

In the first investigation group, the changes in bone marrow were specified as frank proliferation of cellular elements, mainly, at the expense of erythroid cells and the high level of anerythrocyte in bone marrow.

In the second investigation group, the deceased from acute alcohol intoxication against chronic alcoholism the following observations were made: cell decrement of bone marrow at the expense of fat cells proliferation, decrement of erythroid cells, and also plethora of atriums and small bloodstrokes.

Frank proliferation cells of bone marrow in instances of acute alcohol intoxication without the signs of chronic alcohol is documented by quantitative reading, displayed in fig. 1.

Essential differences of quantitative reading, the balance between fat cells and red fragment cells of bone marrow are presented in fig.2.

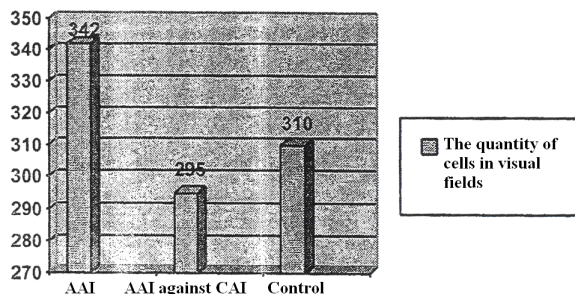


Fig. 1. The balance between medium indexes of the general cell quantity in visual field, in histologic section of deceased bone marrow in three investigation groups

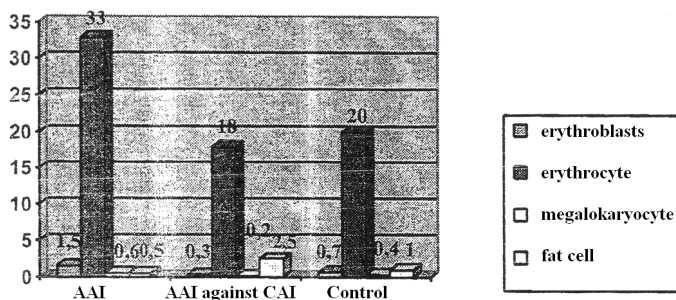


Fig. 2. Indexes of the balance between cell elements in the structure of bone marrow

In the first group, lien was signified by plethora of vessels, distention of red pulp, and some quantity fall of responsive focuses with medium macrophage reaction.

In the second group, lien was signified by quantity increase of responsive focuses with distention and increase of macrophage activity, with the signs of rarefying mantle zone.

Frank quantity increase of responsive focuses and macrophage in lien with acute alcohol intoxication against chronic alcohol intoxication are displayed in fig.3.

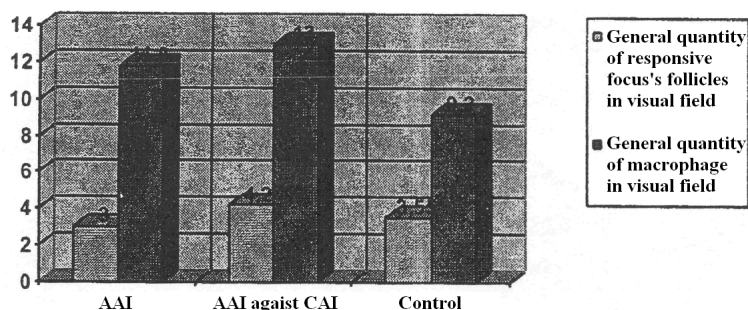
In the first group, frank plethora of vessels was detected in lymph nodes mediastinal and some quantitative fall of responsive focuses with medium macrophage reaction.

In the second group, quantitative increase of responsive focuses with distention of macrophage activity, with the signs of rarefying mantle zone.

Thus, the research results make it possible to make the following conclusion:

1. Acute alcohol intoxication without the signs of chronic alcoholism is accompanied by frank hyperplasia cells of bone marrow, quantitative in-

crease of erythroblasts and erythrocytes and some increase of megalokaryocytes, distention of lien's red pulp with frank plethora of vessels.



*Fig. 3*

2. Acute alcohol intoxication against chronic alcoholism has a number of differences, expressed by the fall of bone marrow cells in histologic sections, decrease of erythroblasts and megalokaryocytes, increase of fat cells against the increase of responsive follicles in lymph nodes mediastinal with the growth of macrophage activity.
3. The obtained results could be used for differential diagnostics of chronic alcoholism and initial acute intoxication by ethanol.
4. The research in this direction should proceed for establishment of more signified by regular structural changes in bone marrow and lymph nodes mediastinal and lien depending on the level of ethanol concentration in blood.

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