

Whitehead in a Blood Clot as an Additional Indicator of a Pathological Process in the Body and its Possible Cause

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Abstract: This article sums up the results of a long-term research of clots in blood donors and patients with various infectious and non-infectious diseases. Particular attention is paid to a whitehead formed under the clot and its cellular composition which is different in donors and patients.

Keywords: blood clot, white head.

Long-term research of clots in blood donors and patients shows that a blood clot is heterogeneous and has got a very complex structure, which includes both permanent components (white fibrin threads and blood formed elements) and additional components (white head, tail, clot core and clot shell). These additional components can be detected visually (white head) or after applying special treatment that we have developed and patented in Russia (tail, clot core and clot shell).

Special attention is paid to the white head of a blood clot which is located at the top part of the clot and can be detected visually. This light opaque gelatinous formation, clearly limited by serum and loosely connected to the blood clot, has got a thick shell. Though 90-92 percent of its composition is water, if pierced, the head doesn't leak fluid, because its tissue is composed of small overlapping short threads, many of which are angled towards each other.

We believe that such short threads of the head are formed by erythrocytes in the blood clotting process, as in a blood smear prepared from a blood clot erythrocytes are often interconnected by similar short threads. If a clot contains a white head, it can be detected in a test tube or other vessels (penicillin bottle, vessels of different volume). The threads of the head remind of short needles, having sharp ends and a thickening in the middle. As a whole they create a strong grid, a kind of a barrier which captures the formed elements of blood.

The size of the white head does not depend on the size of a clot, the volume of the vessel or the quantity of taken blood. It may be barely noticeable, looking like a small flattened ball, or take up the entire volume of the remaining serum in the acute period of some serious infectious diseases (tick-borne encephalitis, sepsis, meningococcal infection, hemorrhagic fever with renal syndrome).

Formed elements of the whitehead in a blood clot are represented by the same types of cells both in blood donors and patients, however, the number of these cells and their ratio may vary and depend upon many factors. In 27 percent of the total number of donors who are excluded from giving blood after a medical examination the formation of a whitehead is associated with leukocytosis, leukopenia, thrombocytopenia, lymphocytosis or accelerated ESR. This group also includes donors with serum markers of hepatitis B and C. Normally donors in satisfactory medical condition and with no changes in blood compositions have got up to 40-50 cells in the whitehead of the blood clot, mainly erythrocytes and, to a lesser degree, echinocytes (of various age), spherocytocytes and individual conglomerates of erythrocytes and sometimes echinocytes which form small columns.

If a blood donor has got serum markers of viral hepatitis B and C (detected by the PCR method), the number of cells in a whitehead increases by 2-3 times, mainly due to the increase in spherocytocytes. A similar pattern is observed in patients with acute viral hepatitis A and B and cirrhosis of viral etiology. In contrast, in cases of jaundice of tumoral genesis, inflammatory diseases and sepsis the whitehead usually consists of erythrocytes, echinocytes and their conglomerates.

Both blood donors and patients with no serum markers of viral hepatitis B and C may have such markers in the whitehead of a blood clot only. This is especially important for patients delivered to the emergency room of an infectious hospital who are to be diagnosed for an infectious pathology (acute respiratory infection, tonsillitis, erysipelas, bronchitis, pneumonia) and sent for an out-patient treatment or under the supervision of an infectious disease clinic.

It should be noted that in cases of severe disease, the cells in the whitehead may be completely absent (empty head) which indicated a poor prognosis. We pay particular attention to the emergence of a blood clot whitehead in patients with viral hepatitis B. The statistically processed results of a comparative evaluation of patients with acute viral hepatitis B of a medium severity, one group of which (50 identical persons) had got a whitehead and the other group (50 more identical persons) had got an empty whitehead, showed that the patients with whiteheads had had a lower level of leukocytosis, a higher transaminase activity, a higher level of fibrinogen and a lesser duration of a hospital stay.

Summing up our observation, we would like to point out that the research of blood clots, its permanent and variable components in particular, can serve as an essential addition to a comprehensive medical examination of a patient.

Useful properties and blood clots components

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Abstract: This article sums up some results of a research on possibilities of use of blood clots and its components for making additional therapeutic agents and making certain foods from animal blood.

Keywords: blood clot.

Blood clots in donors and patients are not researched in clinical practice. Animal blood clots are not researched in medicine and are not used in everyday life. According to our long-term observations, blood clots in humans, animals and birds are formed on the same principle and consist of two main parts – fibrin and the liquid part of the blood, mainly represented by the serum and the formed elements.

A blood clot may be separated into these two component parts mechanically. The ratio of fibrin and its physical condition is different for humans, small and large animals and birds. Human fibrin is isolated as short white threads, its wet weight amounts to 2-4 percent of the wet weight of the blood clot. Fibrin in domesticated pigs and horses is isolated as white, long and thick threads, it is close to human fibrin in its form and density. The blood clots in cows and bulls are very hard to separate, because the clot itself mainly consists of fibrin.

As the blood clot separates into two parts (fibrin and erythrocytes), we suggest using them separately. We also stress the importance of studying blood clots by laboratory methods to obtain additional information about the state of the body.

Human blood clots

In usual practice of blood transfusion stations the blood clots are decontaminated and recycled, but are not used. By separating blood clots into fibrin and the liquid part, we propose to use them as follows. After removal of fibrin the erythrocytes are in a free state. They are not adsorbed on the fibrin and are not connected to it chemically, but are entangled in the fibrin threads, which normally leads to the arrest of bleeding.

The erythrocyte suspension can be processed into biological glue. The resulting white mass of fibrin quickly dries, shrinks and becomes reddish-brown in color. In this case fibrin becomes stony