

Carbon disulfide and low-level ionising irradiation: causes of hypercoagulable state, impair cell-cell communication and accelerated atherosclerosis

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It has been known, that carbon disulfide and ionizing radiation induce the accelerated atherosclerosis. Goal. To evaluate the hemostasiologic balance in persons, chronically exposed by low-level indicated factors.

Objectives and methods

Sixty-one worker of viscose industry and 250-personnel, contacted to X-ray more 10 years. The hemostasis was studied using evaluation of the platelet function (ADP-induced aggregation 1.0 and 2.5 μM , epinephrine-aggregation 2.5 μM and ristocetin-agglutination 1.0 mg L^{-1}), granulocyte function using luminescent microspectral analysis *in vivo* dyed acridine orange 10-5 M and coagulation (APTT, PT, TT, fibrinogen level and their paracoagulation derivates, Hageman- and euglobulin-dependent lysis).

Results

The platelet activation (increase of platelet aggregation, increase of sensitiveness to aggregation stimuli and ristocetin-induced agglutination) was detected in both group in comparison to normal level. The increase of active granulocytes in circulation was detected also ($P < 0.05$) with possible realization of secretion of granules, that deep impaired the cell-cell communication. The hypercoagulable state was observed in both groups also the activation of tenase- and prothrombinase, impaired fibrinolysis. Therefore, the involve of all hemostasis structures was observed with impair for hemostasis system in whole.

Conclusion

We postulate that chronic low-level carbon disulfide and ionizing radiation exposure were causal for hemostasiologic imbalance and impaired the cell-cell communication and therefore may be one of the basic pathway for accelerated atherosclerosis.