Angiologiia i sosudistaia khirurgiia = Angiology and vascular surgery 2018 vol.24 N1, pages 21-28

Decreased retraction of blood clots in patients with venous thromboembolic complications

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Abstract

Haemostatic disorders play an important role in the pathogenesis of acute venous thrombosis. One of the least studied reactions of blood coagulation and thrombogenesis is spontaneous contraction of blood clots, which takes place at the expense of the contractility apparatus of activated blood platelets adhered to fibrin fibres. The work was aimed at studying the parameters of contraction of blood clots, formed in vitro, in blood of 41 patients with acute venous thromboses as compared with the same parameters in apparently healthy donors. We used a new instrumental method making it possible to determine the time from initiation to the beginning of contraction, as well as the degree and velocity of clot contraction. It was revealed that in patients with venous thrombosis the ability of clots to shrink was significantly reduced as compared with the control. We detected a statistically significant retardation of and decrease in of blood clot concentration in patients with venous thrombosis complicated by pulmonary artery thromboembolism as compared with contraction in patients with isolated deep vein thrombosis, witch may be important for early diagnosis and determination of the risk of thromboembolism. Besides, we revealed a statistically significant retardation of contraction in patients with proximal thrombosis as compared with contraction in patients with distal thrombosis, with similar values of the degree of contraction. Contraction was statistically significantly reduced in acute thrombosis (less than 21 days), whereas in subacute thrombosis (more than 21 days) the parameters of contraction were closer to normal values. The obtained findings suggest that reduction of blood clot contraction may be a new, hitherto unstudied pathogenetic mechanism deteriorating the course and outcome of venous thrombosis. The clinical significance of contraction and its impairments, as well as the diagnostic and prognostic value of the laboratory test for blood clot contraction would merit further study.