Surgery effect on hemorheological profiles in patients with colon cancer

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The aim of this study was to estimate the rheological properties of blood in cancer patients before and after surgery.

14 healthy volunteers and 12 patients with colon cancer were enrolled in this study. Viscosity of plasma and whole blood were evaluated by means of Brookfield viscometer DV2T (USA). Erythrocyte deformability and aggregability were determined by using of RheoScan-AnD 300 system (South Korea) and direct light microscopic technique with computer image analysis.

Before surgery whole blood viscosity in patients was markedly lower (up to 24.7\%, $p<0.01$) compared to healthy control. Further reduction of blood viscosity (up to 24.5\%, $p<0.01$ compared to the initial state) was registered after surgery. This reduction was mainly due to the substantial decay of hematocrit – in patients it was by 16\% ($p<0.001$) lower than in controls and after surgery this difference was aggravated. Microrheological blood properties were markedly worsened in patients before surgery compared to healthy control - extent of RBC aggregation was increased by 37\% ($p<0.05$), resistance of aggregates was elevated by 23\% ($p<0.01$), erythrocyte deformability was reduced (by 2\%, $p<0.01$). These unfavorable changes of RBC properties were aggravated after surgery ($p<0.01$).

Fixed alterations of hemorheological properties in colon cancer patients may facilitate tissue hypoxia diminishing tissue oxygenation that favors settlement of tumor-cells and thus metastasis.

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