Erythrocyte deformability tests by filtrometry, slit-flow and rotational ektacytometry in splenectomy, spleen resection or spleen autotransplantation

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Spleen resection at various degrees or spleen autotransplantation can partly preserve/restore the splenic filtration function, as previous studies have demonstrated. For better evaluation and follow-up the effectiveness of various spleen preserving operative techniques, a composite methodological approach has been applied in a canine experimental model. Beagle dogs were subjected to control (n=6), to splenectomy (SE, n=4), one-third and two-third spleen resection (n=4/each) or to spleen autotransplantation groups (AU, using Furka’s method, n=8). The follow-up period was 18 postoperative (p.o.) months. Erythrocyte deformability was determined in parallel by bulk filtrometry, slit-flow and rotational ektacytometry. By filtrometry, relative cell transit time increasing was seen in the SE group (mostly in animal nr. SE-3), showing the highest values on the 3rd, 9th and in 18th p.o. months. Elongation index values decreased in this group (by both ektacytometers). In general, AU and resection groups’ values were lower versus control and higher than in SE. Since in the circulation both elongation by shear stress and filtration occur, these various erythrocyte deformability testing methods together may describe better the alterations. Considering the possible complications related to asplenic-hypoasplenic conditions, individual analysis of cases is highly important. Histology and SPECT-CT examinations would reveal the background of the individual differences.

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