Capillary blood flow characteristics and endothelium function in healthy volunteers and patients suffering from socially significant diseases.

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Abstract: Socially significant diseases require accurate diagnostic tools to assess their severity and progression. Traditional diagnostic methods have limitations in providing detailed information about blood flow characteristics, particularly in the microcirculation. The objective of our study was to measure and compare the microcirculation parameters in both healthy volunteers and groups of patient suffering from cardiac heart disease (CHD) and atrial fibrillation (AF). Also, we identified a relationship between blood microcirculation parameters and endothelial function. Digital optical capillaroscopy was used to assess the microcirculation parameters, for example, capillary blood flow velocity and the size of red blood cell aggregates. The endothelial function was determined as the ratio of pulse wave amplitudes measured on the wrist arteries after and before constriction. The results indicate significant alterations in blood flow characteristics and endothelial function among patients with CHD and AF compared to healthy volunteers. Also, the correlation between different measured parameters is different for the studied groups of patients and healthy volunteers. These findings highlight the potential of digital optical capillaroscopy as a non-invasive tool for evaluating blood flow abnormalities in cardiovascular diseases, aiding in early diagnosis and management of the disease.