The Impact of Histological Clot Composition in Embolic Stroke.

Abstract:
Thrombus composition has been suggested to have a decisive impact on the outcome of patients treated by mechanical thrombectomy because of embolic stroke. The recent development of stent retrievers allows collection and, hence, histopathological analysis of fresh thrombus material. Against this background, the aim of this prospective study was to assess the impact of thrombus composition on mechanical recanalization, clinical outcome and stroke etiology. Thirty-four patients suffering from acute ischemic stroke due to occlusion of the distal internal carotid artery/carotid-T, anterior cerebral artery, or middle cerebral arteries were mechanically recanalized, and thrombus material was obtained. Histological thrombus composition was compared with imaging, clinical, and neurointerventional data. The main findings were that a higher percentage of white blood cells (WBCs) in the thrombus was associated with (i) cardioembolic etiology, (ii) extended mechanical recanalization time, and (iii) less favorable recanalization (Thrombolysis in Cerebral Infarction score) and clinical outcome (National Institute of Health Stroke Scale). Our results suggest that thrombi with a high WBC fraction are related to more organized thrombi of cardioembolic origin associated with less favorable recanalization and clinical outcome in acute ischemic anterior circulation.
stroke. WBC-mediated immunological and coagulatory processes may play a key role in thrombus formation and pathogenesis of stroke warranting further investigation.