Commentary

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Evaluation of Denali IVC Filter Outcomes Acute Ischemic Stroke Thrombus Composition

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Description

Assessing the results related to the Denali IVC filter was the aim of this study (Bard Peripheral Vascular, Tempe, Arizona). Between 2015 and 2022, 508 filters were installed in 500 patients. Of them, 159 (31.4%) were deemed permanent and 284 filters were recovered at the study site. 27 (5.3%) patients had follow-ups at outside hospitals without a known retrieval, 21 (4.1%) filters were recovered at external hospitals and 17 (3.3%) patients were lost to follow-up. At the study site, there were 275 successful cases of initial retrieval and 7 more successful cases of second efforts, for an overall success rate of 99.3%. In 18 out of 284 instances (6.3%) and in 12 out of 284 cases (4.2%), the initial retrieval venogram revealed clot development in the filter. Seven (8.9%) of the 79 patients who underwent contrast-enhanced imaging but did not have retrieval performed at the study site had thrombus within the filter another seven (8.9%) had caval thrombosis, occlusion, or severe stenosis and one (1.2%) had a new, nonocclusive caval thrombus. There were no reports of filter fracture, migration, or clinically significant extravascular strut penetration.

Blood clotting

The use of electrochemical impedance spectroscopy as a technique to ascertain cell properties such density, size and shape was highlighted in another area of the study. By supporting clinical decision-making, the creation of an electrical impedance-based medical device targeted at evaluating Acute Ischemic Stroke (AIS) clot properties could greatly improve outcomes for stroke patients. Through a variety of processes, neutrophils, macrophages, lymphocytes, and Neutrophil Extracellular Traps (NETs) contribute to the formation of thrombus and are associated with risk factors for stroke. To assist better understand the thrombosis process that leads to AIS, the project included assessing total White Blood Cell (WBC) numbers, WBC subtypes and NET composition in AIS clots to find potential etiological changes. A major cause of morbidity and mortality worldwide, ischemic stroke is primarily caused by blood clotting and thromboembolism. Patients with ischemic stroke have different blood clot composition and structure, according to recent studies. In addition to discussing clot composition, function and structure in ischemic stroke, this study tries to provide an overview of clinical diagnosis and available treatment options, such as thrombolysis and thrombectomy. Analyses of clot composition and structure from *ex vivo* thrombi recovered by catheter-mediated thrombectomy as well as *in vitro* clots from patient plasma samples are included in the summarized studies. Additionally, examined are the mechanisms such as NETs and clot contraction that affect the composition and design of clots.

Brain tissue

The findings reveal that although plasma samples from ischemic stroke patients consistently exhibit denser clots that are more resistant to fibrinolysis *in vitro*, the composition and architecture of *ex vivo* clots retrieved during thrombectomy exhibit variability. Future research is anticipated to yield important information for ischemic stroke patient diagnosis, treatment plans and clinical management due to developments in imaging and clot retrieval technology. An irreparable damage to brain tissue occurs when a thrombus obstructs one or more brain arteries, causing an ischemic stroke. The major objective of treatment is to facilitate the restoration of blood flow as soon as feasible.

There are two basic techniques for this purpose: Mechanical thrombus removal and pharmacological thrombolysis utilizing recombinant tissue plasminogen activator (rt-PA). Recanalization is still difficult to accomplish efficiently, even with recent advancements. Although the specific causes of therapeutic failure remain unclear, thrombus composition is probably a critical component of effective recanalization. This review looks at recently discovered components of acute ischemic stroke thrombi and how they affect stroke treatment. Additionally, it talks about how fresh perspectives might enhance the recanalization techniques now used for ischemic stroke patients.