



## Fatty acid binding protein expression in clots retrieved by mechanical thrombectomy from patients with acute ischaemic stroke

Title	Fatty acid binding protein expression in clots retrieved by mechanical thrombectomy from patients with acute ischaemic stroke
Author(s)	Mereuta, Oana Madalina;Fitzgerald, Seán;Douglas, Andrew;Rossi, Rosanna;Silva Santos, Andreia M.;Pandit, Abhay;Thornton, John;O'Hare, Alan;Power, Sarah;Brennan, Paul;Rentzos, Alexandros;Tatlisumak, Turgut;Gunnarsson, Thorsteinn;Davidson, Maria;Brederlau, Anke;Allardt, Arne;Brinjikji, Waleed;Kallmes, David F.;Doyle, Karen M.
Publication Date	2019-05-22
Publisher	Sage Publications
Repository DOI	<a href="https://doi.org/10.1177/2396987319845560">10.1177/2396987319845560</a>

Fatty acid binding protein expression in clots retrieved by mechanical thrombectomy from patients with acute ischaemic stroke.

*Authors:*

Oana Madalina Mereuta<sup>1,2</sup>, Seán Fitzgerald<sup>1,2</sup>, Andrew Douglas<sup>1,2</sup>, Rosanna Rossi<sup>1,2</sup>, Andreia M Silva Santos<sup>1,3</sup>, Abhay Pandit<sup>1</sup>, John Thornton<sup>4,5</sup>, Alan O'Hare<sup>5</sup>, Sarah Power<sup>5</sup>, Paul Brennan<sup>5</sup>, Alexandros Rentzos<sup>6</sup>, Turgut Tatlisumak<sup>6</sup>, Thorsteinn Gunnarsson<sup>6</sup>, Maria Davidson<sup>7</sup>, Anke Brederlau<sup>7</sup>, Arne Allardt<sup>7</sup>, Waleed Brinjikji<sup>8</sup>, David F Kallmes<sup>8</sup> and Karen Doyle<sup>1,2</sup>.

*Affiliations:*

<sup>1</sup>CÚRAM—Centre for Research in Medical Devices, National University of Ireland Galway, Galway, Ireland. <sup>2</sup>Physiology Department, National University of Ireland Galway, Galway, Ireland. <sup>3</sup>School of Medicine, Centro Universitário Unievangélica, Anápolis-Goiás, Brazil. <sup>4</sup>Royal College of Surgeons in Ireland, Dublin, Ireland <sup>5</sup>Department of Radiology, Beaumont Hospital, Dublin, Ireland. <sup>6</sup>Department of Interventional and Diagnostic Neuroradiology, Sahlgrenska University Hospital, Gothenburg, Sweden. <sup>7</sup>Department of Neurology, Sahlgrenska University Hospital, Gothenburg, Sweden. <sup>8</sup>Department of Radiology, Mayo Clinic, Rochester (MN), USA.

*Introduction:*

Lipid accumulation and inflammation are considered hallmarks of the unstable atherosclerotic plaque. In particular, adipocyte fatty acid binding protein (FABP4) expression within the plaque is associated with its progression and vulnerability. The aim of this study was to investigate the histopathology of thrombi collected from acute ischaemic stroke patients who underwent mechanical thrombectomy focusing on the presence of FABP4 and other atherosclerotic plaque components, including collagen and dystrophic calcification.

*Methods:*

250 mechanically extracted thrombi were collected from three partner hospitals: Beaumont Hospital (Dublin, Ireland), Sahlgrenska University Hospital (Gothenburg, Sweden) and Mayo Clinic (Rochester, Minnesota, USA). Clots were immediately formalin-fixed and embedded in paraffin. 3- $\mu$ m thickness serial sections were cut and stained with Martius Scarlett Blue to identify erythrocytes, fibrin, white blood cells and platelets/other. Masson's and von Kossa stains were performed to identify collagen and calcification, respectively. The expression of FABP4 was assessed by immunofluorescence.

*Results:*

FABP4 expression by adipocytes was confirmed in eight of 250 clots (3.2%). Adipocytes represented the main component in one 'white' clot. Collagen was associated in two cases whereas von Kossa staining showed calcification in one case.

*Conclusions:*

The expression of potentially atherogenic components in these clots suggests that they may have originated from large vessel occlusions. Further studies are required to confirm the atherosclerotic aetiology. Our findings have implications for neurointervention and therapeutic strategies to reduce atherosclerotic plaque progression and stroke recurrence.

*Acknowledgements:*

Science Foundation Ireland (Grant Number 13/RC/2073) and Cerenovus.