MedicalXpress

Vascular biologists make a significant discovery in neurobiology

November 29 2007

Researchers investigating blood vessels at Barts and The London School of Medicine have hit upon a new discovery in neurobiology that could have implications for patients experiencing peripheral nerve disorders. Their work, which was conducted in close collaboration with scientists at Imperial College London, University College London, Cancer Research UK and the University of Geneva, features in this week's edition of the renowned journal *Science*.

Lead by Professor Sussan Nourshargh the research reports on the previously unknown expression and function of a particular cell adhesion molecule, junctional adhesion molecule-C (JAM-C), in peripheral nerves. JAM-C, largely associated to date with inflammatory disorders, was found to play a critical role in maintaining the integrity and function of peripheral nerves by forming an integral part of the insulating sheath that surrounds these nerves – the myelin.

Together with their collaborators, Professor Nourshargh and team member Christoph Scheiermann, discovered that mice in which the JAM-C gene had been deleted showed neuronal functional defects – specifically, impaired nerve conduction and behavioural abnormalities indicating muscle weakness.

The findings of the study also indicated that in nerves from patients with particular peripheral nerve disorders the expression of JAM-C was defective. Collectively this study describes a previously unrecognised role for JAM-C and identifies this molecule as a key player in regulating

the structural integrity and function of peripheral nerves. The study also potentially provides insight into the causes of some peripheral nerve disorders and presents a strong platform for further research into this area.

There are more than 100 kinds of peripheral nerve disorders affecting approximately 1 in 20 people, symptoms of which – often starting gradually and steadily worsening – include numbness, pain, tingling, muscle weakness and sensitivity to touch.

Commenting on the significance of the research findings Professor Nourshargh said: “The discovery of JAM-C in peripheral nerves has made a major contribution to the field of neurobiology at a fundamental molecular level, but has also raised the possibility that defective expression and/or function of this molecule may be associated with the pathology of certain peripheral nerve disorders.”

The paper; ‘Expression and Function of Junctional Adhesion Molecule-C in Myelinated Peripheral Nerves,’ is published in *Science* on 30 November 2007.

Source: Queen Mary, University of London