Scientists discover biochemical mechanisms contributing to fibromuscular dysplasia

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An important step has been made to help better identify and treat those with fibromuscular dysplasia (FMD). FMD causes both an abnormal narrowing and enlarging of medium sized arteries in the body, which can restrict blood flow to the kidneys and other organs causing damage. In a new report appearing in August 2014 issue of *The FASEB Journal*, scientists provide evidence that that FMD may not be limited to the arteries as currently believed. In addition, they show a connection to abnormalities of bones and joints, as well as evidence that inflammation may be driving the vascular disease in FMD patients.

"Having medical treatment options for FMD, or for people who may be susceptible to FMD, will improve their quality of life by preventing vascular complications," said Nazli B. McDonnell, M.D., Ph.D., a researcher involved in the work from the National Institute on Aging at the National Institutes of Health in Baltimore, Maryland. "Recognizing the additional features of FMD, namely those involving the joints and bones, may help us to design better treatments for these ancillary symptoms that were previously thought to be independent of FMD."

To make this discovery, Nazli and colleagues recruited patients with FMD and performed physical exams. Vascular imaging and bone density studies were also conducted. Researchers measured specific proteins in the blood that indicated inflammation activation of the transforming growth factor-beta (or TGF-beta) pathway. Patient skin biopsies also were collected to grow dermal fibroblast cell lines, which were studied for TGF-beta pathway and inflammatory biomarkers and were compared

to age-, sex-, and BMI-matched controls that did not have FMD.

"FMD is a serious blood vessel disease for which we know little," said Gerald Weissmann, M.D., Editor-in-Chief of *The FASEB Journal*. "But this advance in basic science tells us that when we learn details how a relatively rare disease comes about, we learn more about others such as heart attacks, stroke and inflammatory arthritis."

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