



GEN67 - Development of a Blood Test for Marfan Syndrome

OBJECTIVE: To determine a Marfan “signature” profile of microfibril biomarkers and to test whether this profile is associated with aortic root size and with the rate of aortic root growth, a first step toward the development of a blood test for Marfan syndrome.

ORGANIZATION

Lead Investigator: Lynn Sakai, PhD

Co-Investigators: Susan J. Hayflick, MD, Lynn M. Marshall, ScD

Funding Source: Shriners Hospitals for Children

Inclusion criteria:

- Subjects ages 5-39 diagnosed with Marfan syndrome, Loeys-Dietz, EDS, Familial TAAD or a genetic mutation for whom a sample is available.

Samples:

- Plasma

Data:

- Surgical
- Genetic
- Image
- Demographics
- Medication use
- Family History

BACKGROUND AND RATIONALE

Aortic root dissection and rupture, a silent killer, is the major cause of early death in Marfan syndrome and in Marfan-related disorders. Because of the high risk for aortic dissection, management of these diseases requires regular monitoring of the size of the aortic root. When the aortic root reaches a maximal diameter (~5.0-5.5 cm), prophylactic replacement of the aortic root is usually recommended. However, aortic root diameter is an unreliable predictor of aortic dissection. Better methods for monitoring aortic disease are required.

CONCLUSIONS

Results:

- Pending

DESIGN

- Method:*
- Quantitate fragments of fibrillin-1, fibrillin-2, and fibulin-4 in blood samples from children and young adults with MFS and related disorders; determine whether these biomarkers reveal a MFS profile when compared to related disorders and to unaffected controls.
 - Test whether high concentrations of circulating fragments of fibrillin-1, fibrillin-2, or fibulin-4 are associated with large aortic root diameters.
 - Construct longitudinal profiles of concentrations of fibrillin-1, fibrillin-2, and fibulin-4 fragments in children with MFS and related disorders; correlate these profiles with aortic root growth.
 - Using mass spectroscopy, identify selected fibrillin-1 fragments present in high concentrations in blood samples.