Aortic Disease Summit
September 22, 2009 - September 23, 2009
Hyatt Regency Baltimore Inner Harbor, Baltimore, MD

Summary

On September 22-23, 2009, the first Aortic Disease Summit was held in Baltimore, MD. This summit has been hosted by the National Registry for Genetically Triggered Thoracic Aortic Aneurysms and Cardiovascular Conditions (GenTAC), which is sponsored by the National Heart, Lung and Blood Institute (NHLBI) and the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS). The overriding purpose of the GenTAC Registry is to establish a robust data bank and biospecimen repository, and facilitate fundamental and clinical research through use of these resources. The ultimate goal is to reduce cardiovascular complications, which represent the primary cause of morbidity and premature death in persons with genetically triggered thoracic aortic aneurysms. The Registry is a critical resource that can be used by the research community to further understand and study the genetic basis of thoracic aortic aneurysms and to improve the diagnosis and clinical management of affected patients. Dr. Kim Eagle, from the University of Michigan and Dr. Hal Dietz from Johns Hopkins University were co-chairs of this meeting.

Scientific sessions included a wide range of both basic and clinical science with regard to aortic disease. Basic scientists, medical geneticists, cardiologists and surgeons came together to constructively debate the exciting state-of-the-art research concerning the disease pathogenesis, progression, and treatment of individuals with genetically-induced aortic aneurysms.

Highlights from the Summit include:

- **New Insights into the Pathogenesis of Aortic Aneurysm from Disease Genes and Animal Models.** An overview of genes, genetic pathways and development involved in numerous disease states such as Marfan syndrome, Loeys-Dietz syndrome, Turner Syndrome, Ehlers Danlos syndrome(s), and Familial Thoracic Aneurysms. Research indicates that the alteration of signaling pathways might be a unifying theme in disease pathogenesis and reflect the effects of mutations in the target genes.

- **Advances in Imaging and Biomarkers of Aortic Disease.** Although imaging techniques have improved greatly to assess aortic wall biomechanics and aortic wall thickness due to artherosclerosis, the technology is not yet available to evaluate tissue integrity, critical to understanding the effects of mutation in genes that encode the components of the matrix and common targets in those affected with connective tissue disorders. Biomarker discovery indicates that several opportunities exist to develop biomarkers that could assist with diagnosis within six hours of dissection but neither predictive biomarkers nor those helpful for diagnosis at later times in the evolution of dissection are yet on the drawing board.
• **Gaps in the Natural history of Aortic Disease.** Gaps in the natural history of aortic disease remain and are largely disease specific. One of the major issues has been the extent to which perceived natural history reflects ascertainment biases. In some disorders the marked variation in disease severity between genders remains fertile ground for investigation and may provide clues to therapy.

• **Controversies and Opportunities in the Surgical Management of Aortic Disease.** This scientific session included a lively discussion regarding current size measurements suggested for prophylactic repair of aortic root aneurysms, since some dissections occur at sizes under the current “disorder specific” threshold for repair. Earlier intervention could dramatically increase the pool of candidates who, if operated upon, could become at-risk for the current complications that follow root replacement: development of descending aneurysms, extended risk due to anticoagulation, and earlier re-operations for aortic regurgitation.

• **Novel Medical Therapeutic Strategies in the Treatment of Aortic Disease.** This session provided insight into state-of-the-art research in biological therapies currently being considered. Biological TGF-β antagonists have promise because they appear to target closer to the altered biology (at least in Marfan syndrome).

The meeting successfully integrated various disciplines which boosted much needed cross-discipline collaborations in the field and created a cooperative environment which will benefit individuals with many connective tissue disorders that increase the risk for aortic and other arterial disease.

*Special thanks to Dr. Josephine Grima, Vice President of Research and Government Relations, National Marfan Foundation, for preparing this summary.*