Lab Dept: Anatomic Pathology

Test Name: TGFBR1 DELETION/DUPLICATION HDT ARRAY

General Information

Lab Order Codes: R1DD

Synonyms: Aortic aneurysm, familial thoracic 5 (AAT5) TGFBR1;Loeys-Dietz syndrome, type 1A (LDS1A) TGFBR1

CPT Codes: 81479 – Molecular Pathology, Unlisted Procedure

Test Includes: Deletion/Duplication HDT Array uses 60mer oligonucleotide sequences designed to selectively complement target areas with an extremely high degree of specificity. High resolution and sensitivity are achieved by assigning a number of probes to each exonic region to allow for a minimum of 3 probes within each 300-500 base section of the genomic DNA sequence. Non-coding intervening sequences are targeted at a minimum with approximately half of the density used for exonic regions. Many intervening sequences are more densely covered. The minimum CNV size detected by this high-density array is 300-500 nucleotides, which is the technical limit of the assay using these stringent parameters.

Logistics

Test Indications: For confirmation of symptoms and the clinical diagnosis related to Aortic aneurysm, familial thoracic 5 (AAT5) TGFBR1or Loeys-Dietz syndrome, type 1A (LDS1A) TGFBR1.

AAT5 and AAT3 have been linked to mutations in the transforming growth factor Beta receptor type I and II genes (TGFBR1 and TGFBR2). Patients may have aneurysms of the aorta and other arteries. TGFBR2 mutations are currently estimated to be responsible for 5% of familial thoracic aortic aneurysms and dissections (TAAD).

Loeys-Dietz syndrome (LDS) is a recently described syndrome caused by mutations in one of two genes, TGFBR1 (Type 1A) or TGFBR2 (Type 1B). The reported phenotype is highly variable and overlaps considerably with Ehlers-Danlos syndrome IV or Marfan syndrome. A high percentage of patients have aortic root aneurysm or other arterial aneurysms. Some have cardiac abnormalities including patent ductus or atrial septal defects. Many display arterial tortuosity. Skeletal defects may include hypertelorism, pectus defects, joint laxity, craniosynostosis, arachnodactyly, scoliosis, talipes equinovarus, camptodactyly and malar hypoplasia. Some have dural ectasia. Additional features may include uterine, spleen or bowel rupture, thin, translucent, hyperextensible or velvety skin with atrophic scars and easy bruising. Blue sclera and a bifid uvula have also been observed.

Lab Testing Sections:	Anatomic Pathology - Sendouts
Referred to:	Connective Tissue Gene Tests (CTGT)
Phone Numbers:	MIN Lab: 612-813-6280
	STP Lab: 651-220-6550
Test Availability:	Daily, 24 hours
Turnaround Time:	1 – 2 weeks
Special Instructions:	Please include a completed CTGT Request form with the patient or specimen to the laboratory.

Specimen

Specimen Type:	Whole blood
Container:	Lavender top (EDTA) tube
Draw Volume:	6 mL (Minimum: 4 mL) blood
Processed Volume:	Same as Draw Volume
Collection:	Routine venipuncture
Special Processing:	Lab Staff: **Do Not** centrifuge. Specimen should be sent in original collection container. Send via overnight shipping with a cold pack to reach CTGT Monday through Friday. If weekend or holiday when drawn, store at refrigerated temperatures. Please include a CTGT Shipment Packing Slip with the shipment.
Patient Preparation:	None
Sample Rejection:	Mislabled or unlabeled specimen

Interpretive

Reference Range:	Interpretive report
Critical Values:	N/A

Limitations:	Published estimates of test sensitivity for genes linked to certain disorders can be very inaccurate, and that it is difficult to predict the probability of detecting a mutation in any single gene for one individual. The following factors contribute to this challenge: Many disorders have overlapping phenotypes; some disorders are linked to mutations in more than one gene; in some instances genes remain to be linked to specific disorders; for most disorders, proper diagnosis requires that clinical findings are considered along with genetic findings.
Methodology:	High-Density Targeted Array
References:	Connective Tissue Gene Tests October 2010 (484) 224-2900 Fax (484) 244-2904
Updates:	2/11/2013: CPT update 7/10/2013: CPT update CTGT, previously listed as 81404