EGL Genetics | Eurofins Clinical Diagnostics
2460 Mountain Industrial Boulevard | Tucker, Georgia 30084
Phone: 470-378-2200 or 855-831-7447 | Fax: 470-378-2250
eglgenetics.com

Uniparental Disomy of Chromosome 6 (UPD6): Methylation Analysis

Test Code: TU
Turnaround time: 3 weeks
CPT Codes: 81402 x1

Condition Description

6q24-relatedtransient neonatal diabetes mellitus (TNDM) is one of the most common causes ofneonatal diabetes, with an estimated incidence of 1 in 400,000 live births [1].TNDM begins in the first six weeks of life and resolves by 18 months of age.Neonates present with severe growth retardation and persistent hyperglycemia. Accordingto one study [2], the average birth weight is 1930 g at 39 weeks gestation, andthe average age at presentation is 7 days. Insulin levels are low orundetectable at presentation, and ketonuria is generally absent. Macroglossiaoccurs in about 1/3 of cases. Umbilical and inguinal hernias have also beenreported. The average length of time on insulin is 111 days. There is noassociation with HLA antigens common in type 1 diabetes. While affected infantsrecover by three months of age, around 50% will develop type 2 diabetes laterin life.

TNDM is causedby overexpression of two imprinted genes at 6q24, *PLAGL1 (ZAC)* and *HYMAI.*Both *PLAGL1 (ZAC)* and *HYMAI* are expressed from the paternallyinherited chromosome 6. Approximately 35% of TNDM cases are caused by paternaluniparental disomy of chromosome 6.

Methylation-specificPCR is used to assess a differentially methylated region that controlsexpression of *PLAGL1 (ZAC)* and *HYMAI*. Both paternal UPD6 and someisolated methylation defects of this imprinted region will be detected by thisanalysis.

References:

1. Gardner,R.; Mackay, D.; Mungall, A.; Polychronakos, C.; Siebert, R.; Shield, J.;Temple, I.; Robinson, D.: An imprinted locus associated with transient neonataldiabetes mellitus. Human Mol. Gen. 9(4): 589-596, 2000.

2. Temple, I. and Shield, J.: Transientneonatal diabetes, a disorder of imprinting. J. Med. Genet. 39:872-875, 2002.

Genes

HYMAI, PLAGL1 (ZAC)

Indications

This test is indicated for:

- Confirmation of a clinical/biochemical diagnosis of patUPD6

Methodology

DNA methylation specific PCR assay targeting the differentially methylated region (DMR) upstream of the *PLAGL1 (ZAC)* and *HYMAI* genes on chromosome 6q24 is used to test for paternal uniparental disomy of chromosome 6 (patUPD14). Parental samples are NOT required for patUPD6 analysis, but may be requested to confirm a diagnosis.

Specimen Requirements

Submit only 1 of the following specimen types

Type: DNA, Isolated

Specimen Requirements:
Microtainer
3µg
Isolation using the Perkin Elmer™Chemagen™ Chemagen™ Automated Extraction method or Qiagen™ Puregene kit for DNA extraction is recommended.

Specimen Collection and Shipping:
Refrigerate until time of shipment in 100 ng/µL in TE buffer. Ship sample at room temperature with overnight delivery.

Type: Whole Blood (EDTA)

Specimen Requirements:
EDTA (Purple Top)
Infants and Young Children (2 years of age to 10 years old: 3-5 ml
Older Children & Adults: 5-10 ml
Autopsy: 2-3 ml unclotted cord or cardiac blood

Specimen Collection and Shipping:
Ship sample at room temperature for receipt at EGL within 72 hours of collection. Do not freeze.

Special Instructions

Submit copies of diagnostic biochemical test results with the sample, if appropriate. Contact the laboratory if further information is needed.