SCO2 MUTATION ANALYSIS
JOHN WELSH CARDIOVASCULAR DIAGNOSTIC LABORATORY

The cytochrome c oxidase (COX) complex is composed of thirteen subunits which reside in the inner mitochondrial membrane. Three of these subunits, which form the catalytic core of the complex, are encoded by mitochondrial DNA, while the remaining ten subunits are encoded by nuclear DNA. COX catalyzes the terminal step in electron transport resulting in the reduction of molecular oxygen by reduced cytochrome c. Multiple mutations have been identified in several COX subunits, including all three mitochondrial-encoded subunits, resulting in COX deficiency and disease. Mutations in Sco2, which functions in mitochondrial copper delivery, have been identified in patients with fatal, infantile hypertrophic cardiomyopathy with encephalopathy.

SCO2 is composed of two exons. However, only exon 2 contains protein-coding sequence. A variety of autosomal recessive SCO2 mutations have been described in infantile hypertrophic cardiomyopathy patients with encephalopathy, including nonsense, missense, and small duplication mutations.

The John Welsh Cardiovascular Diagnostic Laboratory offers molecular genetic testing for SCO2 mutations. Symptomatic individuals will be tested by automatic fluorescent DNA sequencing of exon 2 of the SCO2 gene. Genetic counseling is recommended for all individuals and their families.

REASON FOR REFERRAL

- Molecular confirmation of the diagnosis of severe infantile hypertrophic cardiomyopathy with encephalopathy resulting from SCO2 mutations

METHODOLOGY

Genomic DNA will be analyzed for SCO2 mutations by automatic fluorescent DNA sequencing of exon 2 of the SCO2 gene, as well as the intron 1/exon 2 splice junction, and a portion of the 3’ untranslated region. Patient DNA will be sequenced in both the forward and reverse orientations.

SERVICE FEES

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<tr>
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<th>Direct and Institutional Billing</th>
<th>CPT Codes</th>
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<tr>
<td>Index Case</td>
<td>$300 per sample</td>
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<tr>
<td>Additional Family</td>
<td>$250 per sample; known familial mutations only</td>
<td>83891, 83898x2, 83904x4, 83912</td>
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SENSITIVITY

DNA Sequencing Analysis: Approximately 99% detection of mutations in exon 2 of SCO2

SPECIMEN REQUIREMENTS

Blood (preferred): EDTA (purple-top) tubes: Adult: 5 cc Child: 5 cc Infant: 2-3 cc
Tissue: Frozen (preferred), RNAlater, Formalin-fixed, Paraffin embedded
Other Body Fluids: Call to inquire

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