Overview

Useful For
Evaluating for chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) and related demyelinating peripheral neuropathies

Profile Information

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<th>Test Id</th>
<th>Reporting Name</th>
<th>Available Separately</th>
<th>Always Performed</th>
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<tr>
<td>CIDPI</td>
<td>CIDP/NP Interpretation, S</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>CONCS</td>
<td>Contactin-1 IgG CBA, S</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>NF4FS</td>
<td>Neurofascin-155 IgG4, S</td>
<td>No</td>
<td>Yes</td>
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Method Name
CONCS: Cell Binding Assay (CBA)
NF4FS: Flow Cytometry (FCM)
CIDPI: Medical Interpretation

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required
Patient Preparation: For optimal antibody detection, it is recommended to collect the specimen before initiation of immunosuppressant medication.

Container/Tube:
Preferred: Red top
Acceptable: Serum gel
Specimen Volume: 3 mL

Forms
If not ordering electronically, complete, print, and send a Neurology Specialty Testing Client Test Request (T732) with the specimen.
Clinical Information

Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) is an acquired, immune-mediated condition effecting peripheral nerves and nerve roots and is characterized by electrodiagnostic features of demyelination with a chronic onset that leads to significant disability. The prevalence of CIDP is estimated at approximately 2 to 4 cases per 100,000 persons. Although a rarer cause of polyneuropathy, it is important to recognize as it is treatable with the appropriate use of immunomodulating therapies. Although the exact immunological trigger of CIDP remains unclear, a subset of patients with suspected CIDP have been identified with autoantibodies targeting nodal-paranodal proteins. These patients share common immunopathological mechanisms of disease, clinical features, and treatment responses that are distinct from classic CIDP. A common target of these autoantibodies is the neurofascin-155 (NF155): contactin-1 (CNTN1) complex. NF155 is expressed at the paranodal loops of Schwann cells where it interacts with CNTN1 expressed on adjacent axons. This interaction stabilizes and allows the proper organization of the paranodal axoglial junction. Antibody-mediated disruption of this interaction in animal models recapitulates the pathophysiology observed in humans.

NF155 IgG antibodies are present in approximately 5% to 10% of patients with CIDP like presentations and, more rarely, in those with more acute forms of demyelinating polyradiculoneuropathy. NF155 IgG positive cases are more likely to present with distal weakness, gait disturbance, tremor, and dysarthria as compared to classic CIDP. Most patients who are seropositive for NF155 IgG have been reported to be refractory to intravenous immune globulin (IVIG) therapy and often require second line treatment that includes B-cell depleting therapies such as rituximab. Studies in animal models, as well as the disease pathology indicate NF155 IgG4 antibodies directly disrupt the paranodal axoglial junction ultimately leading to demyelination. IgG4 is the predominant antibody subclass found in these patients and associates with poorer treatment responses to IVIG. The detection of NF155 IgG4 is a highly specific finding and has not been reported in other disease mimics such as hereditary neuropathies, distal acquired demyelinating symmetric neuropathy, and motor neuron disease.

CNTN1 IgG antibodies are present in approximately 2% of patients with CIDP like presentations. CNTN1 IgG positive
cases are more likely to present with neuropathic pain, sensory ataxia, and subacute progressive demyelinating polyradiculoneuropathy or polyradiculopathy. The majority of seropositive patients have been reported to be refractory to treatment with IVIG. However, some of these patients respond well to B-cell depleting therapies such as rituximab. Up to half of CNTN1 IgG positive patients with CIDP or CIDP-like presentations have been reported to develop membranous nephropathy and, thus, screening for proteinuria may be warranted.

Reference Values
Contactin-1 IgG: Negative
Neurofascin-155 IgG4: Negative

Interpretation
Seropositivity for contactin-1 IgG is consistent with an immune-mediated demyelinating polyradiculoneuropathy/polyradiculopathy.

Seropositivity for neurofascin-155 IgG4 is consistent with an immune-mediated demyelinating polyradiculoneuropathy.

Cautions
A negative result does not exclude an immune mediated demyelinating neuropathy.

This test should only be utilized in the appropriate clinical context.

The use of immunotherapy prior to sample collection may negatively impact the sensitivity of this assay.

Clinical Reference

Performance
Test Definition: CIDP
Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy
Evaluation, Serum

Method Description
Contactin-1 IgG:
Patient specimen is applied to a composite slide containing transfected and nontransfected HEK-293 cells. After incubation and washing, fluorescein-conjugated goat-antihuman IgG is applied to detect the presence of patient IgG binding. (Package insert: IIFT: Neurology Mosaics, Instructions for the indirect immunofluorescence test. EUROIMMUN; FA_112d-1_A_UK_C13, 02/2019)

Neurofascin-155 IgG4:
This cell-binding assay utilizes flow cytometry to detect neurofascin 155 (NF155) IgG4 antibodies in patient sera. Briefly, a stable HEK293 cell line expressing human NF155 on the cell surface is premixed with parental HEK293 cells that do not express human NF155. The 2 cell populations are distinguished using a green fluorescent protein marker, which is only expressed in NF155 expressing cells. The mixture of cells is incubated with diluted patient sera to allow antibodies present in the sample to bind target antigens. Next the cells are incubated with a human IgG4 specific secondary antibody conjugated to AlexaFluor 647 to detect cell bound human IgG4 antibodies. The AlexaFluor 647 signal intensity of the different cell populations is measured using a flow cytometer. The IBI (IgG binding index) is then calculated as the median fluorescent intensity (MFI) of AlexaFluor 647 of the NF155 expressing cells divided by the MFI of the parental non-NF155 expressing cells. When the IBI is greater than or equal to 2.0 the result is considered positive for NF155 IgG4 antibodies. (Unpublished Mayo method)

PDF Report
No

Day(s) Performed
CONCS: Monday through Thursday, Sunday
NF4FS: Monday, Friday

Report Available
5 to 10 days

Specimen Retention Time
28 days

Performing Laboratory Location
Rochester

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.
Test Definition: CIDP
Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy Evaluation, Serum

Test Classification
This test was developed, and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
86255 x 2

LOINC® Information

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