MAYO CLINIC LABORATORIES

Test Definition: CIDPI

Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy Interpretation, Serum (Non-Orderable)

Overview

Useful For

Only orderable as part of a profile. For more information see CIDP / Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy Evaluation, Serum.

Interpretation for the Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy Evaluation

Method Name

Only orderable as part of a profile. For more information see CIDP / Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy Evaluation, Serum.

Technical Interpretation

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Only orderable as part of a profile. For more information see CIDP / Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy Evaluation, Serum.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	28 days	
	Ambient	72 hours	
	Frozen	28 days	

Clinical & Interpretive

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 still 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.

Neurofascin-155 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 immunoglobulin (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 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.

Contactin-1 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 patients who are CNTN1 IgG positive with CIDP or CIDP-like presentations have been reported to develop membranous nephropathy; therefore screening for proteinuria may be warranted.

Contactin-associated protein-1 (CASPR1) antibody is useful in the identification of autoimmune nodopathy cases, which can resemble CIDP. Detecting this antibody helps in selecting appropriate treatment. Patients who are CASPR1 IgG positive often do not respond well to IVIg, the standard CIDP therapy, but several have responded well to rituximab therapy. CASPR1 forms a complex with CNTN1, which is important for function. Autoantibodies have been identified that can target each protein (CASPR1 or CNTN1) alone, the CNTN1/CASPR1 complex, or both. Identifying the presence of these autoantibodies is useful in evaluating patients with suspected autoimmune peripheral neuropathy.

Reference Values

Only orderable as part of a profile. For more information see CIDP / Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy Evaluation, Serum.

An interpretive report will be provided.

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.

Seropositivity for contactin-associated protein-1 IgG is consistent with an immune-mediated demyelinating polyradiculoneuropathy.

Cautions

A negative result does not rule out an immune-mediated demyelinating disease.

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

The use of immunotherapy prior to specimen collection may negatively impact the sensitivity of these assays.

Clinical Reference

1. Dubey D, Honorat JA, Shelly S, et al. Contactin-1 autoimmunity: Serologic, neurologic, and pathologic correlates. Neurol Neuroimmunol Neuroinflamm. 2020;7(4):e771
2. Cortese A, Lombardi R, Briani C, et al: Antibodies to neurofascin, contactin-1, and contactin-associated protein 1 in CIDP: Clinical relevance of IgG isotype. Neurol Neuroimmunol Neuroinflamm. 2019;7(1):e639
3. Manso C, Querol L, Mekaouche M, Illa I, Devaux JJ. Contactin-1 IgG4 antibodies cause paranode dismantling and conduction defects. Brain. 2016;139(Pt 6):1700-1712
4. Le Quintrec M, Teisseyre M, Bec N, et al. Contactin-1 is a novel target antigen in membranous nephropathy associated with chronic inflammatory demyelinating polyneuropathy. Kidney Int. 2021;100(6):1240-1249
5. Ogata H, Yamasaki R, Hiwatashi A, et al. Characterization of IgG4 anti-neurofascin 155 antibody-positive polyneuropathy. Ann Clin Transl Neurol. 2015;2(10):960-971
6. Querol L, Nogales-Gadea G, Rojas-Garcia R, et al. Neurofascin IgG4 antibodies in CIDP associate with disabling tremor and poor response to IVIg. Neurology. 2014;82(10):879-886
7. Shelly S, Klein CJ, Dyck PJB, et al. Neurofascin-155 immunoglobulin subtypes: Clinicopathologic associations and neurologic outcomes. Neurology. 2021;97(24):e2392-e2403

Performance

Method Description

An interpretation based on test results is generated by the laboratory information system.

PDF Report

No

Day(s) Performed

Varies

Test Definition: CIDPI

Chronic Inflammatory Demyelinating Polyradiculoneuropathy/Nodopathy Interpretation, Serum (Non-Orderable)

Report Available
5 to 10 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

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 account representative. For assistance, contact Customer Service.

Test Classification
Not Applicable

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CIDPI	CIDP/NP Interpretation, S	69048-7

Result ID	Test Result Name	Result LOINC® Value
616444	CIDP/NP Interpretation, S	69048-7