Autoimmune Encephalopathy and Dementia Panel, Serum and CSF

Last Literature Review: May 2023 Last Update: April 2025

Autoimmune encephalopathy and autoimmune dementia are rare but important **reversible** causes of cognitive impairment and decline.[1,2] Recognition of autoimmune causes of neurologic symptoms and detection of antineural antibodies may help to establish a diagnosis, support treatment decisions, aid with prognostication, serve as a prerequisite for enrollment in clinical trials, and guide the search for an associated malignancy.

Featured ARUP Testing

Autoimmune Encephalopathy/Dementia Panel, Serum 3006201

Method: Semi-Quantitative Cell-Based Indirect Fluorescent Antibody/Semi-Quantitative Indirect Fluorescent Antibody (IFA)/Qualitative Immunoblot/Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Autoimmune Encephalopathy/Dementia Panel, CSF 3006202

Method: Semi-Quantitative Cell-Based Indirect Fluorescent Antibody/Semi-Quantitative Indirect Fluorescent Antibody (IFA)/Qualitative Immunoblot/Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Disease Overview

Autoimmune encephalopathy and autoimmune dementia may develop in the context of paraneoplastic neurologic syndromes or postinfectious syndromes but are most often idiopathic. A diagnosis of possible autoimmune encephalitis should be considered if there is a subacute onset or rapid progression (in <3 months) of short-term memory loss, altered level of consciousness, lethargy, personality change, or psychiatric symptoms as well as either new focal central nervous system (CNS) findings, seizures without another explanation, cerebrospinal fluid (CSF) pleocytosis, or magnetic resonance imaging (MRI) features suggestive of encephalitis, with reasonable exclusion of alternative causes.[3] Although antibody testing is not required for the diagnosis of possible autoimmune encephalitis, it plays an important role in increasing the level of certainty of the diagnosis to probable or definite. The Antibody Prevalence in Epilepsy and Encephalopathy (APE2) score can be used when considering autoimmune causes of encephalopathy and dementia to determine the likelihood that antineural antibodies will be present.[4]

For more information about laboratory testing for autoimmune neurologic diseases, refer to the ARUP Consult Autoimmune Neurologic Diseases - Antineural Antibody Testing topic.

Test Description

ARUP's serum and CSF Autoimmune Encephalopathy/Dementia Panels can be used for the evaluation of patients with new, acute- to subacute-onset encephalopathy, dementia, or cognitive impairment. Testing for the presence of antineural antibodies in both serum and CSF may improve diagnostic yield.[2]

These phenotype-targeted panels test for the presence of antibodies associated with autoimmune encephalopathy and autoimmune dementia. Clinical phenotypes for specific antineural antibody-associated syndromes often overlap, and phenotype-specific panels allow for rapid identification of associated antibodies, which may have implications for treatment, prognosis, cancer screening, and clinical trial enrollment.[2] Other panels may be more appropriate, depending on the patient's clinical phenotype:

ARUP Phenotype-Specific Panels to Consider for Autoimmune Neurologic Disease

ARUP Panel	Test Code	
	Serum	CSF
Autoimmune Epilepsy Panel	3006204	3006205
Autoimmune Movement Disorder Panel	3018964	3018966
Autoimmune Pediatric CNS Disorders Panel	3006210	3006211

Regardless of the panel chosen, order only one panel for serum and/or one panel for CSF; many antineural antibodies are redundant between these panels, and choosing based on the predominant phenotype will provide the most meaningful results. To compare these panels and the antibodies included, refer to the ARUP Antineural Antibody Testing for Autoimmune Neurologic Disease page.

Testing for individual antibodies is also available separately.

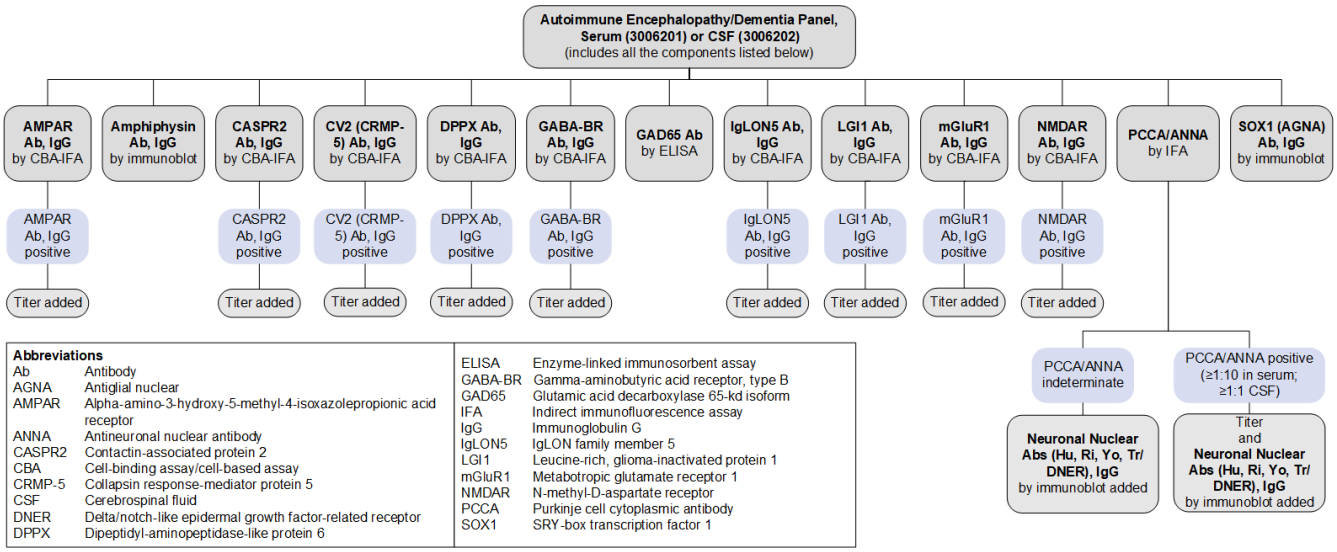
Antibodies Tested and Methodology

Autoimmune Encephalopathy/Dementia Panel, Serum (3006201) and CSF (3006202): Antibodies Tested and Methodology			
Autoantibody Markers	**Methodology**	**Individual Autoantibody Test Code**	
		Serum	**CSF**
AMPAR Ab, IgG	CBA-IFA, reflex titer	3001260	3001257
Amphiphysin Ab, IgG	IB	2008893	3004510
ANNA-1 (Hu)	IFA, reflex IB, reflex titer	2007961	2010841
ANNA-2 (Ri)	IFA, reflex IB, reflex titer	2007961	2010841
CASPR2 Ab, IgG	CBA-IFA, reflex titer	2009452	3001986
CV2 (CRMP-5) Ab, IgG	CBA-IFA, reflex titer	3016999	3017001
DPPX Ab, IgG	CBA-IFA, reflex titer	3004359	3004512
GABA-BR Ab, IgG	CBA-IFA, reflex titer	3001270	3001267
GAD65 Ab	ELISA	2001771	3002788
IgLON5 Ab, IgG	CBA-IFA, reflex titer	3006018	3006013
LGI1 Ab, IgG	CBA-IFA, reflex titer	2009456	3001992
Ma2/Ta Ab, IgG	IB	3017441	3017440
mGluR1 Ab, IgG	CBA-IFA, reflex titer	3006044	3006039
NMDAR Ab, IgG	CBA-IFA, reflex titer	2004221	2005164
PCCA-1 (Yo)	IFA, reflex IB, reflex titer	2007961	2010841
PCCA-Tr/DNER	IFA, reflex IB, reflex titer	2007961	2010841
SOX1 (AGNA) Ab, IgG	IB	3002885	3002886

Ab, antibody; AGNA, antiglial nuclear antibody; AMPAR, alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor; ANNA, antineuronal nuclear antibody type 1; ANNA-2, antineuronal nuclear antibody type 2; CASPR2, contactin-associated protein 2; CBA, cell-binding assay/cell-based assay; CRMP-5, collapsin response-mediator protein 5; DNER, Delta/notch-like epidermal growth factor-related receptor; DPPX, dipeptidyl-aminopeptidase-like protein 6; ELISA, enzyme-linked immunosorbent assay; GABA-BR, gamma-aminobutyric acid receptor, type B; GAD65, glutamic acid decarboxylase 65-kd isoform; IB, immunoblot; IFA, indirect immunofluorescence assay; IgG, immunoglobulin G; IgLON5, IgLON family member 5; LGI1, leucine-rich, glioma-inactivated protein 1; mGluR1, metabotropic glutamate receptor 1; NMDAR, N-methyl-D-aspartate receptor; PCCA-1, Purkinje cell cytoplasmic antibody type 1; PCCA-Tr, Purkinje cell cytoplasmic antibody type Tr; SOX1, SRY-box transcription factor 1

Reflex Patterns

Autoimmune Encephalopathy/Dementia Panel, Serum (3006201) and CSF (3006202): Reflex Patterns



Limitations

These panels do not include every antibody that has been associated with autoimmune dementia or encephalopathy:

- ANNA-3 and PCCA-2 are not included because they are extremely rare (present in approximately 0.0001% of specimens submitted for evaluation using a paraneoplastic antibody panel), and commercial assays to confirm the specificity of these antibodies are not currently available.[5]
- Glial fibrillary acidic protein (GFAP), neuronal intermediate filament (NIF) and its associated reflexes (NIF heavy and light chain, alpha internexin), neurochondrin, and septin 7 are not included because they have been only recently identified and their prevalence is currently not well established.
  - GFAP has been reported in 0.17% of samples screened, often co-occurring with other antineural antibodies.[6]
  - NIF has been reported in 0.014% of samples screened; NIF heavy and light chain and alpha internexin were reflexed in samples which were positive for NIF to further identify the associated antibody.[7]
  - Neurochondrin has been reported in 0.002% of samples tested.[8]
  - Septin 7 has been reported in 0.002% of samples screened.[9]
- As testing for newly described antibodies becomes available and their clinical relevance is established, these panels will evolve to reflect these discoveries.

Test Interpretation

Results

Results must be interpreted in the clinical context of the individual patient; test results (positive or negative) should not supersede clinical judgment.

Autoimmune Encephalopathy/Dementia Panel, Serum (3006201) and CSF (3006202): Results Interpretation	
Result	**Interpretation**
Positive for ≥1 autoantibodies	Autoantibody(ies) detected Supports a clinical diagnosis of an autoimmune encephalopathy or autoimmune dementia Consider a focused search for malignancy based on antibody-tumor associations
Negative	No autoantibodies detected A diagnosis of an autoimmune encephalopathy or autoimmune dementia is not excluded

References

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ARUP Laboratories is a nonprofit enterprise of the University of Utah and its Department of Pathology. 500 Chipeta Way, Salt Lake City, UT 84108
(800) 522-2787 | (801) 583-2787 | aruplab.com | arupconsult.com