Accurate identification can help improve the care and management of patients with AADC deficiency[1,2]

Aromatic L-amino Acid Decarboxylase (AADC) deficiency is a genetic disease associated with defects in neurotransmitter synthesis that can lead to a manifestation of a broad spectrum of symptoms. The most common symptoms of this autosomal recessive disorder include hypotonia, developmental delay, and movement disorders, especially oculogyric crises.[3-6]

Diagnostic pathway for suspected AADC deficiency[2,4]

HYPOTONIA, HYPERTONIA
AND
DELAYED MOTOR DEVELOPMENT
AND
STRUCTURALLY NORMAL MRI

+

MOVEMENT DISORDERS	AND/OR	AUTONOMIC SYMPTOMS
Oculogyric crisis (can be mistaken for seizures)		Ptosis
Dystonia		Excessive sweating
Hypokinesia and/or bradykinesia		Nasal congestion
		Temperature instability

Patients with AADC deficiency may present with one or a combination of symptoms.[2]

TEST FOR AADC DEFICIENCY

Core diagnostic tests	Results
Confirmatory single gene or genetic panel	Mutation(s) in the *DDC* gene
Plasma enzyme activity assay	**LOW** plasma AADC enzyme activity
AND/OR	
CSF neurotransmitter metabolite panel	**REDUCED** HVA, 5-HIAA, and MHPG **ELEVATED** 3-OMD, L-dopa, and 5-HTP **NORMAL** pterins

Adapted from Himmelreich 2019.[2]

Current consensus guidelines recommend genetic testing in combination with CSF neurotransmitter metabolite panel and/or plasma AADC enzyme activity assay to confirm a diagnosis of AADC deficiency.[4]

Genetic testing can help uncover mutation(s) in the *DDC* gene to confirm a diagnosis of AADC deficiency and is available at no cost through PTC Pinpoint™[4]

3-OMD=3-O-methyldopa; 5-HIAA=5-hydroxyindoleacetic acid; 5-HTP=5-hydroxytryptophan; CP=cerebral palsy; CSF=cerebrospinal fluid; DDC=dopa decarboxylase; HVA=homovanillic acid; L-dopa=L-3,4-dihydroxyphenylalanine; MHPG=3-methoxy-4-hydroxyphenylglycol; MRI=magnetic resonance imaging.

AADC insights

No-cost genetic testing is available through PTC Pinpoint™*

PTC Therapeutics and Invitae have partnered to offer no-cost genetic testing, including:

- Programs for individuals at all ages with a suspected neurotransmitter disorder or symptoms suggestive of CP in the absence of risk factors for acquired brain injury
- Post-test genetic counseling
- Family variant testing for blood relatives of those with confirmed or likely pathogenic variants

Learn more about PTC Pinpoint below or contact your PTC Therapeutics representative.

PTC PINPOINT™
CP SPECTRUM GENETIC TESTING PROGRAM

Learn more or order a test ›

PTC PINPOINT™
NEUROTRANSMITTER DISORDERS PROGRAM

Learn more or order a test ›

*Both the Neurotransmitter Disorders Panel and CP Spectrum Disorders Panel are available for order through Invitae and are separate from the no-cost PTC Pinpoint program.

Additional testing for AADC deficiency

Other tests that may be helpful include[7-10]:

- Blood level measurement of 3-OMD
- Urinary organic acid analysis

Why test for 3-OMD?

Reduced AADC enzyme activity results in an increase in L-dopa, 3-OMD, and 5-HTP, and a decrease in the neurotransmitter metabolites HVA and 5-HIAA.[1,3,4,11]

Typically, the diagnosis of AADC deficiency requires CSF neurotransmitter analysis. However, 3-OMD, which is a catabolic product of L-dopa that accumulates in individuals with AADC deficiency, can be detected in their blood. 3-OMD measurement in plasma represents a less invasive, simple, rapid, and valid measure for detecting AADC deficiency.[7,10]

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