

Plasminogen Deficiency, Type 1: For Neurosurgery



Overview of Plasminogen Deficiency (PLGD)

- PLGD Type 1: a quantitative protein deficiency, with decreased plasminogen activity and decreased antigen
 - Due to a genetic mutation in the gene for plasminogen; > 50 different mutations have been identified; Autosomal Recessive inheritance
 - Most common presenting symptom is ligneous conjunctivitis, but multi-organ, systemic disease that can be life-threatening
- PLGD Type 2: reduced functional activity of plasminogen, but normal antigen levels; patients are asymptomatic

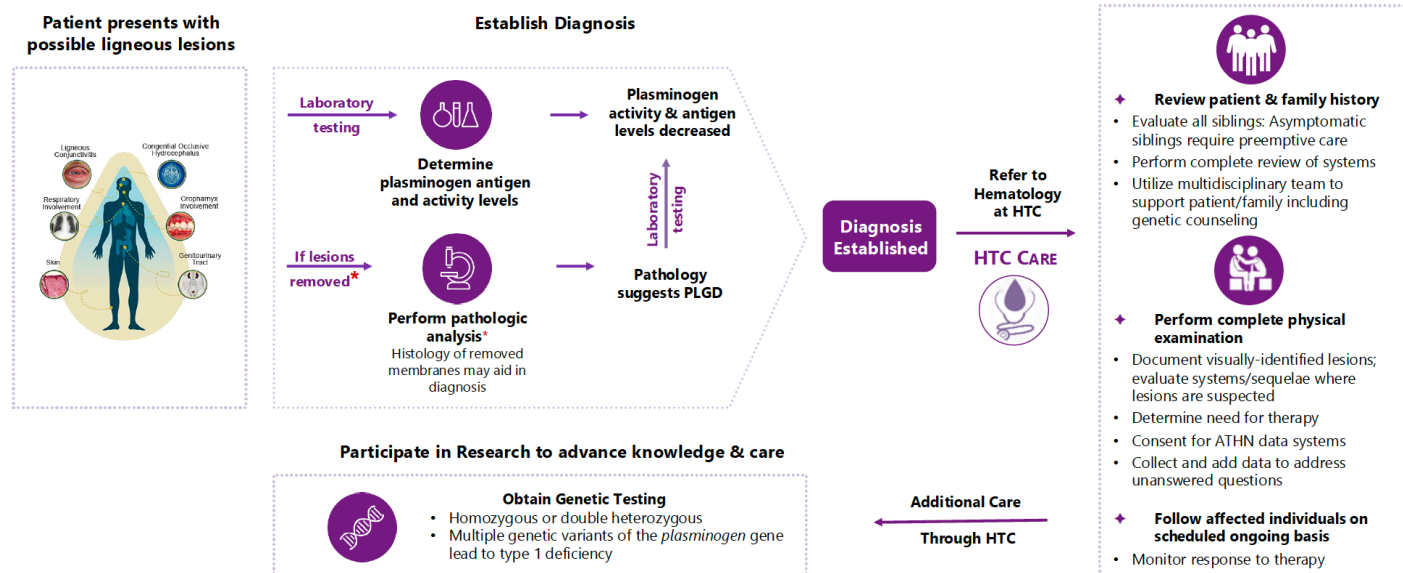
	Normal	PLGD Type 1	PLGD Type 2
Plasminogen Activity	70-130%	Decreased	Decreased
Plasminogen Antigen	6-25 mg/dL	Decreased	Normal
For Patients: My Plasminogen Activity			

Diagnosis

- Complicated by heterogeneous symptoms; symptoms can wax and wane
- Mucosal surfaces of the eyes, ears, nose, gums, airways, lungs, GI tract, kidneys, GU tract, CNS, and skin can all be affected
- Initial point of medical contact therefore includes many disciplines

Treatment

- Ryplazim (plasminogen, human-tvmh) given by IV infusion leads to resolution of lesions
- Surgical removal of lesions, though initially helpful, leads to accelerated regrowth
- Referral to a Hemophilia Treatment Center (HTC) to serve as medical home, and:
 - Educate on product use
 - Ongoing symptom monitoring, outcomes, safety
 - Administer doses, determine dosing schedule
 - Teach home infusion

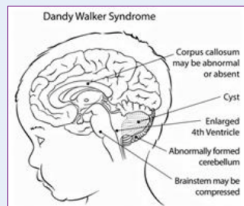


*Lesion removal prior to diagnosis not recommended

Neurosurgery Specific Diagnostic Findings

INITIAL PRESENTATION

- ◆ Congenital hydrocephalus
- ◆ Dandy-Walker malformation



<https://healthjade.com/dandy-walker-syndrome/>



Dandy-Walker malformation:
Lateral and 3rd ventricles enlarged;
septations in lateral ventricles

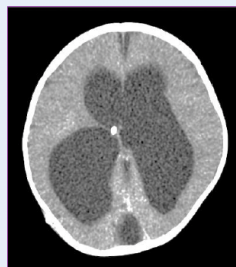
Courtesy of IHTC

Untreated



ADVANCED DISEASE

- ◆ Hydrocephalus
- ◆ VP shunt complications (e.g. shunt obstruction, CSF ascites)
- ◆ Multiple shunts revisions or replacements
- ◆ Developmental milestone delay or loss
- ◆ Mortality



Hydrocephalus
computerized tomography (CT) scan:
septation in R lateral ventricle

Courtesy of IHTC

Neurosurgery Specific Treatment Considerations

- New or suspected diagnosis:
 - Obtain diagnostic blood test (plasminogen activity level) or refer to hematologist to order
 - If confirmed, refer to HTC to establish care and perform thorough review of systems
 - Patients may have more than one system affected at presentation or occurring over time
- Confirmed diagnosis:
 - Coordinate clinical care and collaborate closely with existing care team at HTC
 - Coordinate with HTC prior to surgical procedures
- Be suspicious of common diagnoses:
 - Repeated unexplained shunt obstruction may be due to PLGD-associated lesions or fibrinous deposits
 - Delayed developmental milestones may be due to chronic partial shunt obstruction
- CNS complications reported in patients with PLGD:
 - Congenital hydrocephalus and Dandy-Walker malformation
 - Impaired CSF peritoneal absorption
 - Recurrent VP shunt obstruction
- Repeated shunt complications with presence or history of recurrent ligneous conjunctivitis, ligneous gingivitis, recurrent otitis media with cholesteatoma-like complications, or other system involvement should prompt consideration of PLGD diagnosis

Learn More:



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