



*Niemann-Pick A/B Disease:
Decreased Acid Sphingomyelinase*

Differential Diagnosis: Niemann-Pick disease type A (NPD-A), Niemann-Pick disease type B (NPD-B)

Condition Description: NPD-A and NPD-B are autosomal recessive lysosomal storage disorders (LSD) caused by a deficiency of the enzyme, acid sphingomyelinase (ASM). ASM deficiency results in cellular accumulation of sphingomyelin and cholesterol resulting in organ dysfunction and organomegaly. Patients with NPD-A typically have earlier and more severe symptoms than those with NPD-B.

You should take the following actions:

- Contact family to inform them of the newborn screening result and ascertain clinical status.
- Consult with genetic or metabolic specialist.
- Evaluate the newborn. Infants with NPD may lack clinical symptoms in the newborn period. The presence of hepatosplenomegaly, developmental delay or regression, cherry red maculae, and lung disease is suggestive of NPD-A.
- Initiate timely confirmatory/diagnostic testing and management, as recommended by specialist.
- Provide family with basic information about NPD.

Diagnostic Evaluation: Confirmatory ASM enzyme assay and measurement of oxysterols. When patients have low enzyme activity, *SMPD1* gene analysis and other laboratory studies may be required in consultation with the pediatric metabolic specialist.

Clinical Expectations: NPD-A and NPD-B are caused by a deficiency of sphingomyelinase due to mutations in the *SMPD1* gene. The result is extensive storage of sphingomyelin and cholesterol in the liver, spleen, lungs, and, to a lesser degree, brain. Classification of NPD-A or NPD-B is based on the age of onset as well as the severity of symptoms. NPD-A disease is more severe and characterized by early onset with feeding problems, dystrophy, persistent jaundice, cherry red maculae, development of hepatosplenomegaly, neurological deterioration, deafness, and blindness. Individuals with NPD-A typically die by age 3. NPD-B disease is limited to visceral symptoms with survival into adulthood. Some patients have been described with intermediary phenotypes. Characteristic of the disease are large lipid-laden foam cells on bone marrow biopsy. The combined prevalence of NPD-A and NPD-B is estimated to be 1 in 250,000. Treatment is symptomatic, although there are clinical trials in place.

Additional Information

[Genetics Home Reference](#)

[Genetic Testing Registry: NPD-A](#)

[Genetic Testing Registry: NPD-B](#)

[Baby's First Test](#)

Mayo Clinic Laboratories Testing

[OXYWB / Oxysterols, Blood](#)

[ASMW / Acid Sphingomyelinase, Leukocytes](#)

[NPABZ / Niemann-Pick Disease, Types A and B, Full Gene Analysis, Varies](#)