WHEN TO CONSIDER GLYCOGEN STORAGE DISEASE TYPE II (ACID MALTASE DEFICIENCY)[1]

Broad clinical spectrum, continuum of more or less severe forms[2]
Infant form: early onset in first few months of life, juvenile form: onset > 1 year and up to end of adolescence and adult form

Clinical signs

PROGRESSIVE NEUROMUSCULAR IMPAIRMENT

Infantile form

- Major hypotonia
- Hypomobility
- Hypomimia
- Tongue fasciculations
- Areflexia or Hyporeflexia
- Awareness is fine

Juvenile and adult forms

- **Delayed motor skill acquisition**
- Possible **hyporeflexia** (juvenile form)
- Mainly proximal damage: **progressive myopathy of pectoral,** particularly pelvic, as well as scapular girdles
- Axial damage: **hyperlordosis, camptocormia**
- **Intolerance of exercise** and/or **myalgia** are possibilities but are rarely the most prominent sign

All forms

- **Restrictive respiratory failure** (severe in the infantile form, possible isolated diaphragm damage, occasionally acute, which is a telltale sign in adults): dyspnoea, orthopnoea, recurrent infection, daytime drowsiness, sleep apnoea
- **Difficulty swallowing**
- Oropharyngeal **dysphagia**

CARDIAC IMPAIRMENT

Infantile form

- **Hypertrophic cardiomyopathy** (HCM) severe, may be obstructive (life-threatening)

Juvenile and adult forms

- **Rare cardiac impairment**
- Moderate HCM or arrhythmia

OTHER IMPAIRMENTS

Infantile and sometimes juvenile form

- **Hepatomegaly**
- **Feeding problems, growth retardation**
- **Language delay, joint impairment**
- **Hearing loss**

All forms

- **Macroglossia**
- **Fatigue, asthenia**
- **Possible cognitive impairments**

Blood workup

Elevated **CPK** 3 (<5N) most often
Possible increase in muscle transaminases

Thoracic x-ray: cardiomegaly
ECG: Short PR interval, high voltage QRS, repolarisation abnormalities

Specialist workup

Glycogen Storage Disease type II (Pompe disease)?

★ Specialist medical opinion and reference laboratory

Seek specialist neuro-metabolic advice ★

Specialist workup to guide the diagnosis ★
In collaboration with the centre of excellence, and at the same time as looking for other potential differential diagnoses[4]

Lysosomal acid alpha-glucosidase (= acid maltase) activity assay ★
(spot of blood on blotting paper or venous blood): **a deficiency indicates the disease**[5]

→ Confirmatory genetic analysis (***GAA** gene*) ★ →

★ **Specialist advice from a Centre of Excellence:**
Rare Disease Centre of Reference / Competence: G2M network: https://www.filiere-G2M.fr/annuaire/ and Filnemus network: https://www.filnemus.fr/

Initial assessment, specialist care, specific treatment (indication, initiation) to be coordinated by a Centre of Excellence.
Advantage of early initiation of treatment in infantile form

Genetic counselling, family screening in a specialist centre

For more information:
PNDS French National Authority for Health -Glycogen Storage Disease type II (has-sante.fr), CETL website(Lysosomal disease treatment assessment committee: www.cetl.net), protocol for monitored patients (https://www.filiere-g2m.fr/urgences)

[1] Glycogen storage disease type II or acid alpha-glucosidase deficiency (GAA).
[2] Age of onset and prognosis are related to residual enzyme activity. Very low activity correlates to an earlier age of onset and more rapid progression. In the infantile form with no treatment, death normally occurs within the first year of life.
[3] Sometimes discovered by chance and can be the telltale sign in juvenile and adult forms. CPK is sometimes normal in adults.
[4] Other causes of muscular damage and/or damage to the anterior horn of the spinal cord.
[5] Enzyme activity may be reduced in heterozygotes

Filnemus Filière Neuromusculaire
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