

Friedreich ataxia

Friedreich ataxia is an autosomal recessive disorder and is the most common inherited ataxia. The dorsal root ganglia, dorsal columns, corticospinal tracts and heart are predominantly affected.

Epidemiology

- Incidence: 1/30 000-1/50 000
- Gender: Male = Female

Genetics

- GAA trinucleotide repeat in intron 1 of the *FXN* gene on chromosome 9q: 96% of cases
- Other inactivating *FXN* gene mutations: 4% of cases
- Carrier frequency in the general population: 1/65-1/110
- *FXN* gene mutations cause reduced levels of frataxin.
- This probably causes disease by iron accumulation in mitochondria leading to increased free radicals and cell damage.

Clinical Presentation

- A slowly progressive ataxia
- Mean age of onset 10-15 years
- May present in adulthood with milder disease

Physical Signs

- Dysarthria
- Spasticity in lower limbs
- Muscle weakness
- Absent/ reduced lower limb reflexes with extensor plantars
- Reduction/ loss of vibration sense and proprioception (dorsal columns)
- Progressive gait and limb ataxia
- Pes cavus
- Scoliosis
- Optic nerve atrophy
- Evidence of cardiomyopathy

Diagnosis

- Molecular DNA analysis of the *FXN* gene.
- Carrier testing for at-risk relatives and prenatal diagnosis is possible.

Complications

- Average age of death is <40 years, most commonly due to cardiomyopathy.
- Diabetes mellitus (30%)

Treatment

- Protheses/ walking aids/ wheelchairs for mobility
- Speech, occupational, and physical therapy
- Antispasmodic medication
- Orthopaedic interventions for scoliosis and foot deformities
- Consider antiarrhythmic agents and pacemaker insertion.
- Genetic Counselling for at-risk family members

Surveillance includes:

- Biannual ECG and echocardiogram
- Annual monitoring for diabetes mellitus

Differential diagnosis

- Roussy-Levy syndrome: Charcot-Marie Tooth Disease type I with ataxia, tremor, autosomal dominant
- Spastic paraparesis
- Spinocerebellar ataxias
- Ataxia with Vitamin E deficiency

Pictures:

Scoliosis/ pes cavus

Cardiomyopathy - ECG, ECHO etc