A disease without neurological involvement that in some cases can be effectively treated.
Adult patients may not present clinical manifestations.

MPI-CDG (CDG IB)

WHAT IS MPI-CDG?

Pelletier and collaborators (1986) first described MPI-CDG (CDG-Ib) clinically.[1] The syndrome is caused by mutations in the mannosephosphate isomerase (MPI) gene (on chromosome 15) leading to a deficiency of the cytoplasmic enzyme phosphomannose isomerase.

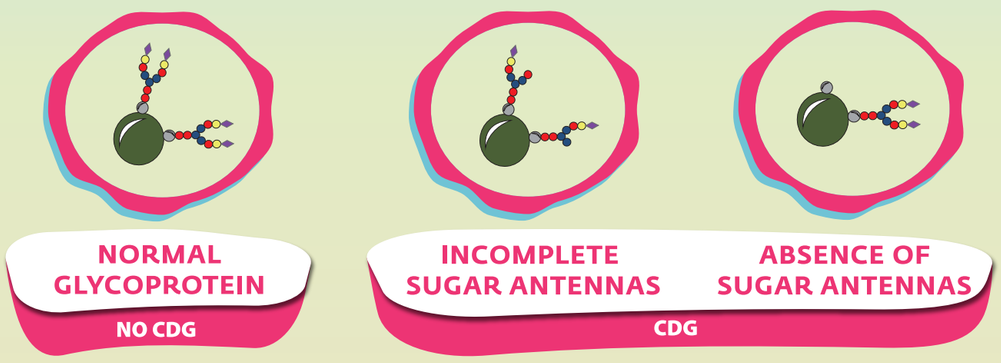
CAUSES

As most CDG, MPI-CDG is inherited as an autosomal recessive disease.

WHAT IS GLYCOSYLATION?

Glycosylation is the cellular process whereby sugar trees (glycans) are synthesized and then attached to proteins and lipids.
It is a major post-translational modification that affects the functions of proteins such as enzymes, carriers of hormones and vitamins, receptor proteins, clotting factors etc.

MPI-CDG are disorders of glycosylation, characterized by an abnormal structure or by the absence of glycans on proteins and lipids.



WHAT IS CDG?

Congenital Disorders of Glycosylation (CDG) is a growing group of genetic diseases, among the:

8000
known rare diseases

GASTROINTESTINAL SYSTEM

Vomiting | Diarrhea | Villous atrophy | Lymphangiectasia | Failure to thrive | Protein-losing enteropathy | Malabsorption

ENDOCRINE SYSTEM

Hyperinsulinemic hypoglycemia

LIVER

Hepatomegaly | Hepatic fibrosis | Cirrhosis | Hepatic failure | Thrombosis/bleeding

LABORATORY TEST

Hypoalbuminemia | Antithrombin, protein C, factor XI deficiency | Serum transferrin isoelectrofocusing type 1 pattern | Phosphomannose isomerase deficiency in leukocytes and fibroblasts

OTHER SYMPTOMS

Prolonged bleeding | Easy bruising

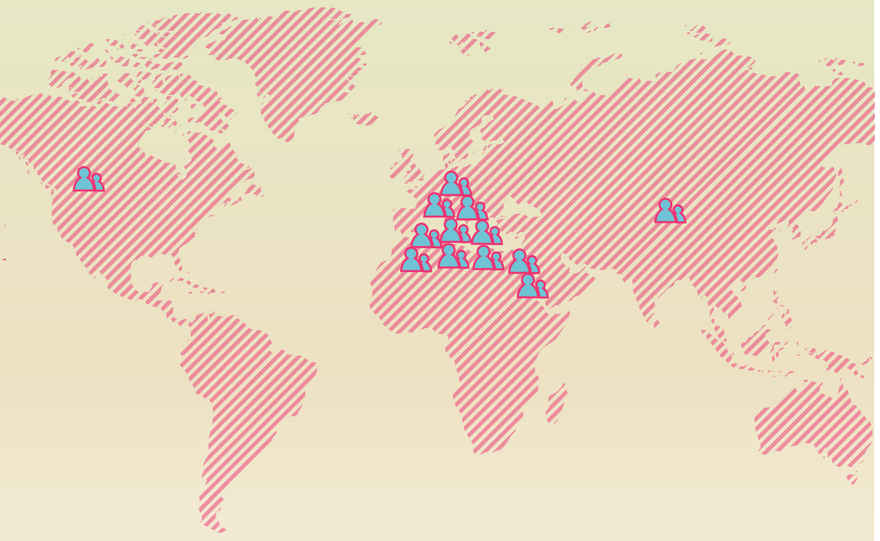
A few asymptomatic adults with MPI-CDG have been detected during familial screening of symptomatic patients and on screening for excessive alcohol consumption. This strongly suggests underdiagnosis.

DIAGNOSIS

Isoelectrofocusing (IEF) of serum transferrin remains the most powerful screening test for CDG with an N-glycosylation defect such as MPI-CDG. The next diagnostic step is enzymatic analysis of phosphomannose isomerase activity in leucocytes or fibroblasts. The diagnosis has to be confirmed by mutation analysis of MPI.
This will permit heterozygote detection in the family and prenatal diagnosis. Contact us if you wish to liaise with a CDG diagnostic laboratory: sindromecdg@gmail.com

BIRTH PREVALENCE

Some 25 patients have been reported. Like most CDG, also MPI-CDG is probably underdiagnosed.[2]



WHEN SHOULD WE SUSPECT MPI-CDG IN A CHILD OR ADULT?

MPI-CDG is clinically distinct from most other CDG by the lack of significant central nervous system involvement; it is a hepato-intestinal disease.
The predominant symptoms are chronic diarrhea with failure to thrive and protein-losing enteropathy with coagulopathy, liver disease and hypoglycemia. It thus should be considered in the differential diagnosis of patients with these symptoms.[6]

CLINICAL MANAGEMENT

MPI-CDG is usually fatal if untreated (Marquardt and Denecke, 2003ref). Niehues et al. (1998)[3][4] found that oral administration of mannose was an effective therapy for this disorder. However, the success of this treatment seems to depend on the degree of liver involvement, and some patients continue to develop liver insufficiency under this treatment. Successful liver transplantation with some 4 years follow-up in a patient with MPI-CDG was reported by Janssen et al (2014).[5]

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PORTUGUESE ASSOCIATION | CDG

Fiona Waddell (MPI-CDG patient)

THIS RESOURCE IS BROUGHT TO YOU BY THE PORTUGUESE ASSOCIATION FOR CDG AND RELATED RARE METABOLIC DISEASES (APCDG).

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