

SSIEM Official Satellite Symposia

**“The 2nd World Conference on Congenital Disorders of Glycosylation (WCCDG)
for Families and Professionals: a challenging story of sugar trees”,
28 to 30 August 2015, in Lyon (France)**



**CONGENITAL
DISORDERS OF
GLYCOSYLATION
WORLD CONFERENCE**
The power of advancing patient-oriented research united
FAMILIES AND PROFESSIONALS

This conference is part of the Educational Program of Excellence on CDG created by the Portuguese Association for CDG (APCDG, www.apcdg.com).

It is organized in partnership with several associations and/or country CDG patient advocates: CDG Australia, CDG Brazil, CDG Czech Republic, CDG Denmark, Foundation of Glycosylation (the FoG) Canada, CDG Denmark, CDG Italy/Ireland, CDG Israel, Les ptits CDG France, CDG Spain, CDG Sweden, CDG USA, CDG UK charity and CDG The Netherlands.

THE POWER OF ADVANCING PATIENT-ORIENTED RESEARCH UNITED

FAMILIES AND PROFESSIONALS

01

CDG IMPACT ON FAMILIES

PATIENT & CARE RELATIONSHIPS AND RELATION OCCUR, FROM CONSUMING TO FINANCIAL KNOWLEDGE AND INFORMATION TO ADDRESS CDG. DELAYS IN DIAGNOSIS AND MEDICATIONS MAY HAPPEN, LACK OF EFFECTIVE TREATMENT OPTIONS, BIG EMOTIONAL, PSYCH AND SOCIAL BURDEN OF LIFE ON PATIENTS & FAMILIES, SIGNIFICANT FINANCIAL BURDEN OF CARE.

02

RESEARCH

LACK OF FUNDING, LIMITED AWARENESS OF SCARCE RESOURCES, SCARCITY OF RESEARCH AND FINANCIAL SUPPORT, LACK OF BASIC RESEARCH TOOLS, LIMITED KNOWLEDGE.

04

UNITED TO OVERCOME CHALLENGES

03

GOAL: CURE CDG

07

HOPE FOR PATIENTS AND THEIR FAMILIES

06

OUTCOMES FROM THE CONFERENCE?

INCREASED AWARENESS OF CDG, IMPROVED PATIENT CARE, COLLABORATION BETWEEN PATIENTS, FAMILIES AND PROFESSIONALS, IMPROVED PATIENT CARE, IMPROVED PATIENT CARE.

05

WHY YOU SHOULD ATTEND WORLD CONFERENCE ON CDG (WCCDG)?

INCREASED AWARENESS OF CDG, IMPROVED PATIENT CARE, COLLABORATION BETWEEN PATIENTS, FAMILIES AND PROFESSIONALS, IMPROVED PATIENT CARE.



WORLD CONFERENCE CONGENITAL DISORDERS OF GLYCOSYLATION

PORTUGUESE ASSOCIATION



PORTUGUESE ASSOCIATION



WWW.APCDG.COM

This and other resources available at:
www.apcdg.com

Endocrine aspects in PMM2-CDG: diagnostic approach and management

Miski Mohamed

Introduction

- PMM2-CDG (CDG 1A)
- Endocrine system
- Endocrine problems in CDG
 - Growth
 - Thyroid dysfunction
 - Sexual development

PMM2-CDG (1A)

- Phosphomannomutase 2 deficiency
- 1: 20.000-50.000



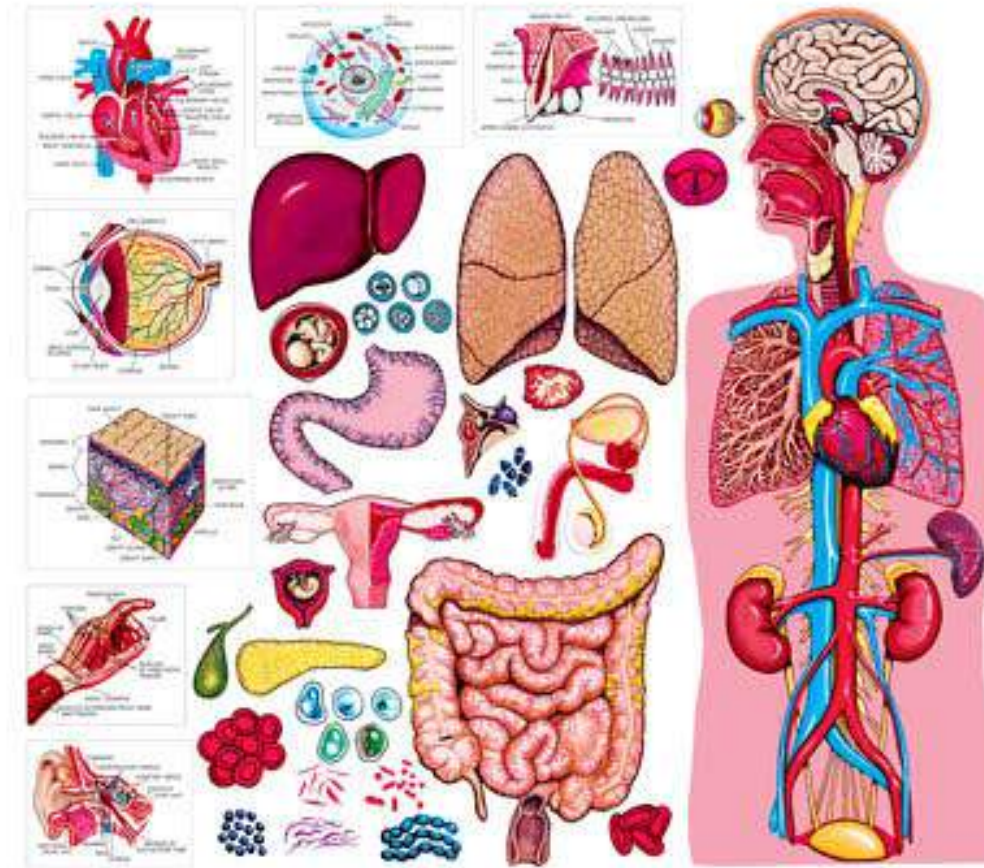
Multisystem disease

Cardiac (cardiomyopathy)

Muscle

Hormones

Intestinal absorption
(protein losing enteropathy)



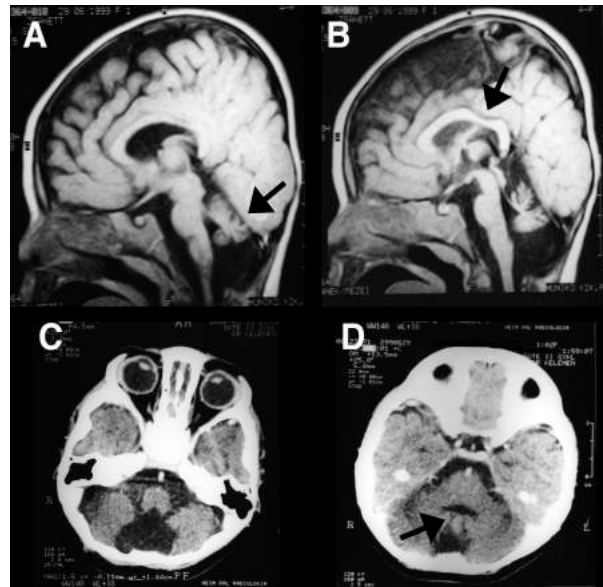
Brain development

Kidney (proteinuria)

Liver

Coagulation factors (bleeding, thrombosis)

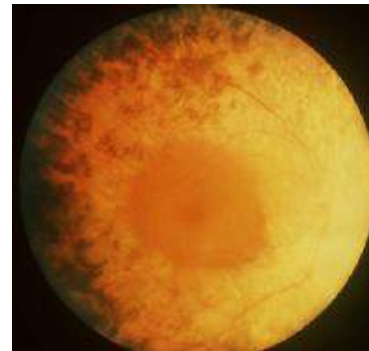
Classical/infantile presentation



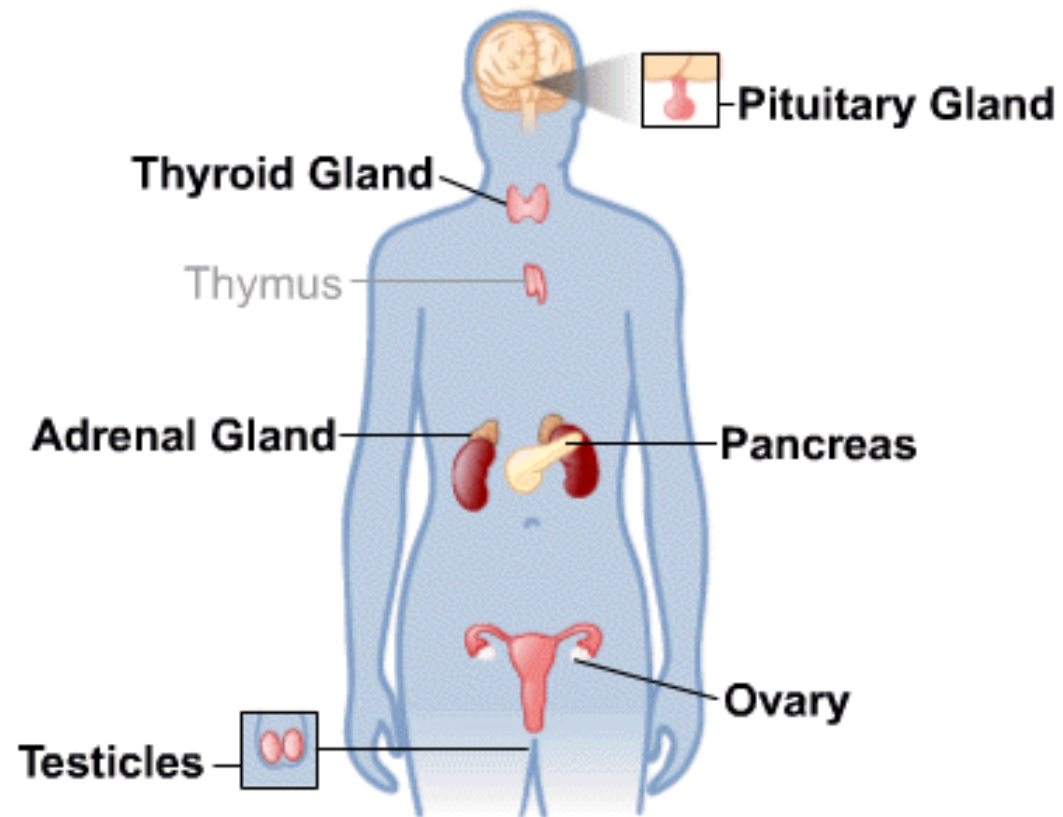
- Feeding problems
- Failure to thrive
- Hypotonia
- Psychomotor retardation
- Ataxia (vermis hypoplasia)
- Abnormal fat distribution
- Endocrine abnormalities**
- Abnormal liver function
- Coagulation defects

Pediatric/adult presentation

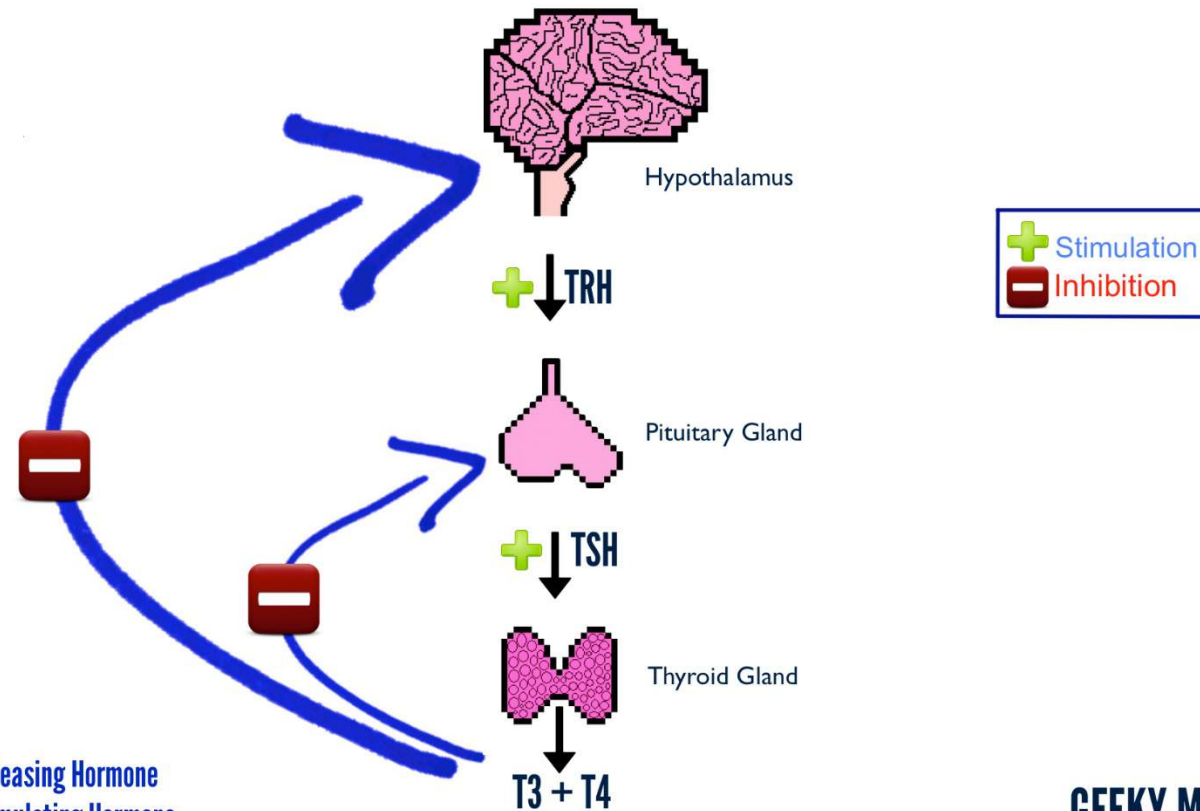
Psychomotor retardation
Speech delay
Ataxia
Retinitis pigmentosa
Cataract
Endocrine abnormalities
Coagulation defects



Endocrine system



Hypothalamic - Pituitary - Thyroid Axis



TRH = Thyroid Releasing Hormone
TSH = Thyroid Stimulating Hormone

Endocrine dysfunction in CDG

- **Hormones** are glycosylated
- Binding/**transport** proteins in blood are glycosylated
 - Thyroxin binding globulin (TBG) is glycosylated
 - Hypothyroidism
- The **receptors** on the target cells are glycosylated
 - Insulin receptor
 - Hyperglycemia due to insuline resistance

Growth

- Failure to thrive
 - First year of life mainly due to feeding problems
 - Protein loss in gut
 - Growth factor/Insulin like growth factor (IGF)

Growth hormone therapy



HYPOTHYROIDISM



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Thyroxine supplementation therapy

Discriminative features of hypothyroidism in CDG

- Constipation
- Low basal body temperature
- Dry/itchy skin
- Decreased sweating
- Thinning of the eyebrows
- Goiter
- Depression



Hypogonadotropic hypogonadism

- Brain problem
 - Low LH/FSH
- Gonads are not stimulated to make enough hormones
 - Deficiency of estrogen or testosterone
 - **Girls**
 - Delayed menstruation
 - No breast development
 - **Boys**
 - Low testicular volume
 - Low sperm count

LH/FSH supplementation therapy



Conclusions

- Hypothyroidism is hard to diagnose in PMM2-CDG
 - Symptoms overlap
 - TSH elevation are common in PMM2-CDG and normalize without intervention in 2/3 of the patients
 - FT4 is most reliable because not glycosylated
 - low FT4 in combination with clinical symptoms → treat for hypothyroidism
 - TBG is not an usefull marker and often abnormal in patients → no clinical consequence!
- Growth hormone deficiency is frequent in PMM2-CDG
 - Can be supplemented but often not necessary
- Secondary sexual deveopment
 - Check for hormones
 - Supplement FH/LSH if needed

Acknowledgements

E. Morava

T. Gardeitchik

H. Claahsen-van der Grinten

D.J. Lefeber

R.A. Wevers



**Foundation Glycosylation (FoG) is the official sponsor of the videos targeted to the
“SSIEM Official Satellite Symposia – Second World Conference on
Congenital Disorders of Glycosylation (CDG): a challenging story of sugar trees”:**



The Foundation Glycosylation (FoG) founded by Duncan Webster (Canada), is the official sponsor of the videos of all oral session that will be given during the conference.

This material will be available in the Youtube channel dedicated to “SSIEM Official Satellite Symposia – Second World Conference on Congenital Disorders of Glycosylation (CDG): a challenging story of sugar trees” at:

For more information about the work of this organization which is focused on research to ALG9 -CDG (CDG -1L), visit the following link:
<http://www.thefog.ca/main.html>

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