CookChildren's.

Congenital Generalized Lipodystrophy

A Case Presentation

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Disclosures

- Neither presenter has any financial disclosures
- Neither presenter has any conflicts of interest

Cardiovascular Health and Risk Prevention Program

- Purpose:
  - Better understand the cause(s) of premature CVD, including genetic and acquired health risks;
  - Develop effective means of prevention through public and professional health education;
  - Early detection and timely treatment of at - risk children and adolescents.

REACH

REACH – Risk Evaluation to Achieve Cardiovascular Health

- **2 pediatric endocrinologists**
- **1 pediatric geneticist**
- **2 registered nurses**
- **Registered dietitian**
- **Social worker**
- **Psychologist**
- **Child life specialist**
- **Research project manager**

Objectives

Explain Complications

Identify clinical features

Describe treatment

Congenital Generalized Lipodystrophy (CGL)

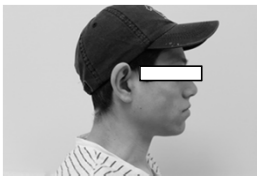
Case Report

- **2 Mexican - American siblings**
- **19 yo male, 8 yo female**
- **4 healthy siblings**
- **Abnormal clinical findings**
- **Birth history**

Assessment Findings

Clinical finding	Male	Female
No subcutaneous fat	✓	✓
Abnormal lab results	✓	✓
Muscle manifestations	✓	✓
Dysmorphic features		✓
Cardiac manifestations	✓	
Failure to thrive		✓

Case Report




Case Report


Test Your Knowledge

Which of the following laboratory results are commonly found in a patient with CGL?

A. Elevated leptin level
B. Decreased cortisol level
C. Elevated creatine kinase level
D. Decreased blood glucose level

Laboratory Findings

Table: Lipid Profile, Blood Sugar, and CK Analysis

Test	TChol mg/dl	TG mg/dl	HDL mg/dl	A1C %	FBG mg/dl	CK Total U/L
Male	260	2034	<10	5.1	85	983
Female	160	616	19	5.0	84	2914
Goal	<200	<150	≥40	<5.7	65-99	<143

Test Your Knowledge

If both parents are carriers, what is the probability of a child being born with an autosomal recessive disorder?

A. 75%
B. 100%
C. 50%
D. 25%

Acquired Lipodystrophy

[2]

1) HIV
   - Long term antiretroviral therapy
2) Partial
   - 250 patients identified
3) Generalized
   - 80 patients identified
4) Localized
   - Various causes

Congenital Lipodystrophy

[2]

1) Autosomal recessive
2) Four types
   - Type 1 – AGPAT2
   - Type 2 – BSCL2
   - Type 3 – CAV1
   - Type 4 – PTRF

CGL Clinical Features

[2,5]

- Muscular appearance
  Accelerated growth
- Hyperphagia
  Hepatomegaly
- Mild hirsutism in females
  Irregular menses with PCOS

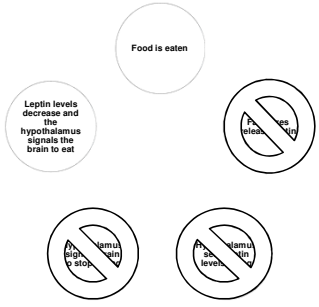
Test Your Knowledge

Leptin is also known as the ____ hormone.

A. Synthesis
B. Satiety
C. Thyroid
D. Growth

Leptin and It's Role in CGL

Leptin and It's Role in CGL



CGL Type 4

1

Type 4 confirmed by genetic testing - 30 patients

1) **Progressive fat loss**
   - **During infancy**
2) **Congenital myopathy**
   - **CK levels and arrhythmias**
3) **Cardiac arrhythmias**
   - **Catecholaminergic polymorphic ventricular tachycardia (CPVT)**
4) **Other clinical findings**

CGL Clinical Features

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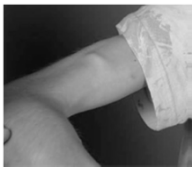
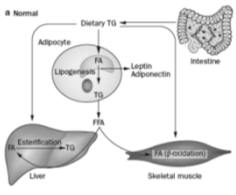
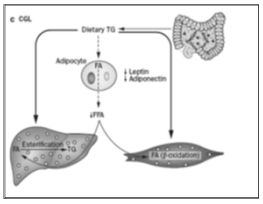


TG use/storage; normal vs CGL

1





Metabolic Complications

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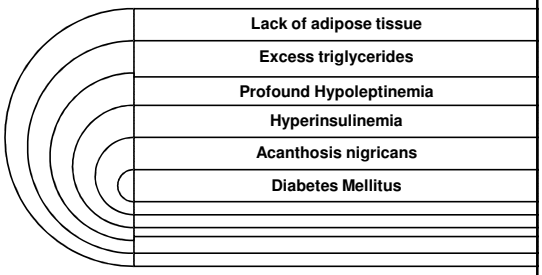


Management of Complications

1) Medications
   - Fenofibrate
   - Fish oil
   - Gemfibrozil
   - Vitamin D3
   - Atenolol
   - Metreleptin
2) Dietary Modifications

Management of Complications cont.

1) Cardiac manifestations
   - Defibrillator
   - 2 episodes of cardiac arrest
   - Cervical sympathectomy

Metreleptin

7

- Metreleptin replaces leptin
  - In conjunction with a recommended diet
    - Lower triglyceride levels
      - Average reduction 184 mg/dL
    - Lower blood sugar levels
      - Average reduction 49 mg/dL
    - Lower A1c levels
      - Average reduction of 2%

More on metreleptin

Side Effects & Adverse Reactions 7

- Headache
- Weight loss
- Abdominal pain
- Hypoglycemia
- Anti-metreleptin antibodies

Test Your Knowledge

What type of diet would you recommend for a patient with CGL?

A. Low fat diet
B. Ketogenic diet
C. Low residue diet
D. Low sodium diet

A Word About Diet Modifications

[1, 3]

- **Limited research on most effective diet for patients**
- **Recommended Diet:**
  - **Calorically balanced, low fat diet (15-20% daily Calories from fat)**
  - **No concentrated sweets (Ex: Sweets/Desserts, Sugary Beverages)**
- **Goal of total caloric intake matching expenditure**

Diet Modifications

[4]

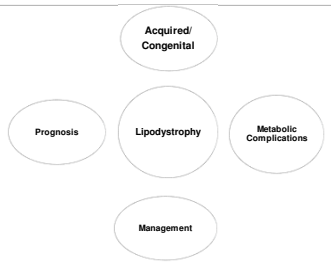
	Estimated kcal needs	Fat intake recommended (15-20% daily kcal)	Fat intake recommended for healthy individuals (25-30% daily kcal)
Male	2450 kcal/day	<36-48g/day	61-73g/day
Female	1600 kcal/day	<25-33g/day	42-50g/day

Diet Modifications

Challenges with diet

- **Miscommunication with Women Infants and Children program**
- **Hyperphagia**
- **Compliance with diet**
- **Lack of data/research**

In Summary



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Questions?