The Cholesterol Dilemma – A Possible Family Affair

Reactor

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Outline

- Clinical burden of dyslipidemia
  - Dyslipidemia in children
- Clinical Features of FH
  - Homozygous and heterozygous FH
  - Screening and diagnosis
- Early identification of FM and reduction of the burden of disease

Clinical burden of dyslipidemia – Dr. JDA Magno

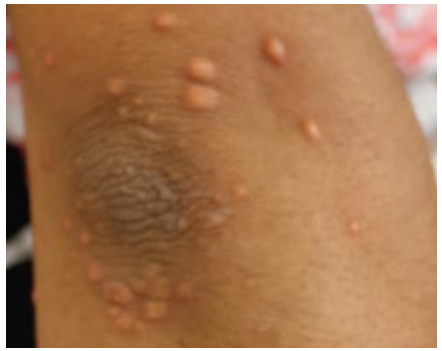
- Dyslipidemia in children
  - Childhood obesity
  - Familial hypercholesterolemia (FH) - Undiagnosed/ underdiagnosed
    - Elevated LDL cholesterol at birth→ adolescent →young adult
- FH
  - A tale of 2 sisters: sister A 16 y of age (adolescent)
  - Strong family history of heart attacks and strokes (mostly <55 years)
- CV Impact of dyslipidemia: increased risks of CV death
  - Early recognition and treatment: primary and secondary prevention
    - ↓ complications of **ASCVD** (Atherosclerotic Cardiovascular Disease)

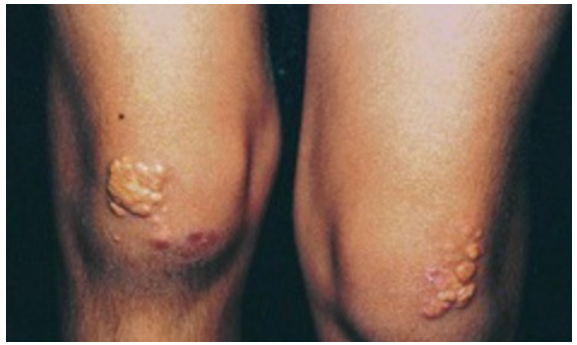
Clinical Features of FH and Cascade Screening

- Dr. R Sy

In children with

- homozygous FH
  - Cutaneous xanthoma: elbows, hands, knees, feet, buttocks
    - no medical consultation
    - undiagnosed, misdiagnosed
    - no referrals and no tests





- heterozygous FH
  - Often asymptomatic
    - family history of cardiometabolic diseases and premature death

PPS: Familial hypercholesterolemia

- Familial hypercholesterolemia (ICD-10): E 78.
- PPS in-patient registry (January 2006 to April 2022)
  - Too few; undiagnosed; under-reporting

9 out of 4,933,550 cases

ICD	Diagnosis	Cases
E78	Disorders of lipoprotein metabolism and other lipidaemias	9

- Heterozygous FH: ~ 1 in 200 to 300 individuals (1:250)
- Homozygous FH: ~ 1:300,000 to 1:400,000.

Hu P, Dharmayat KI, Stevens CAT, et al. Prevalence of Familial Hypercholesterolemia Among the General Population and Patients With Atherosclerotic Cardiovascular Disease: A Systematic Review and Meta-Analysis. Circulation. 2020;141(22):1742. Epub 2020 May 29.
Sjouke B, Kusters DM, Kindt I, et al. Homozygous autosomal dominant hypercholesterolaemia … Eur Heart J. 2015;36(9):560

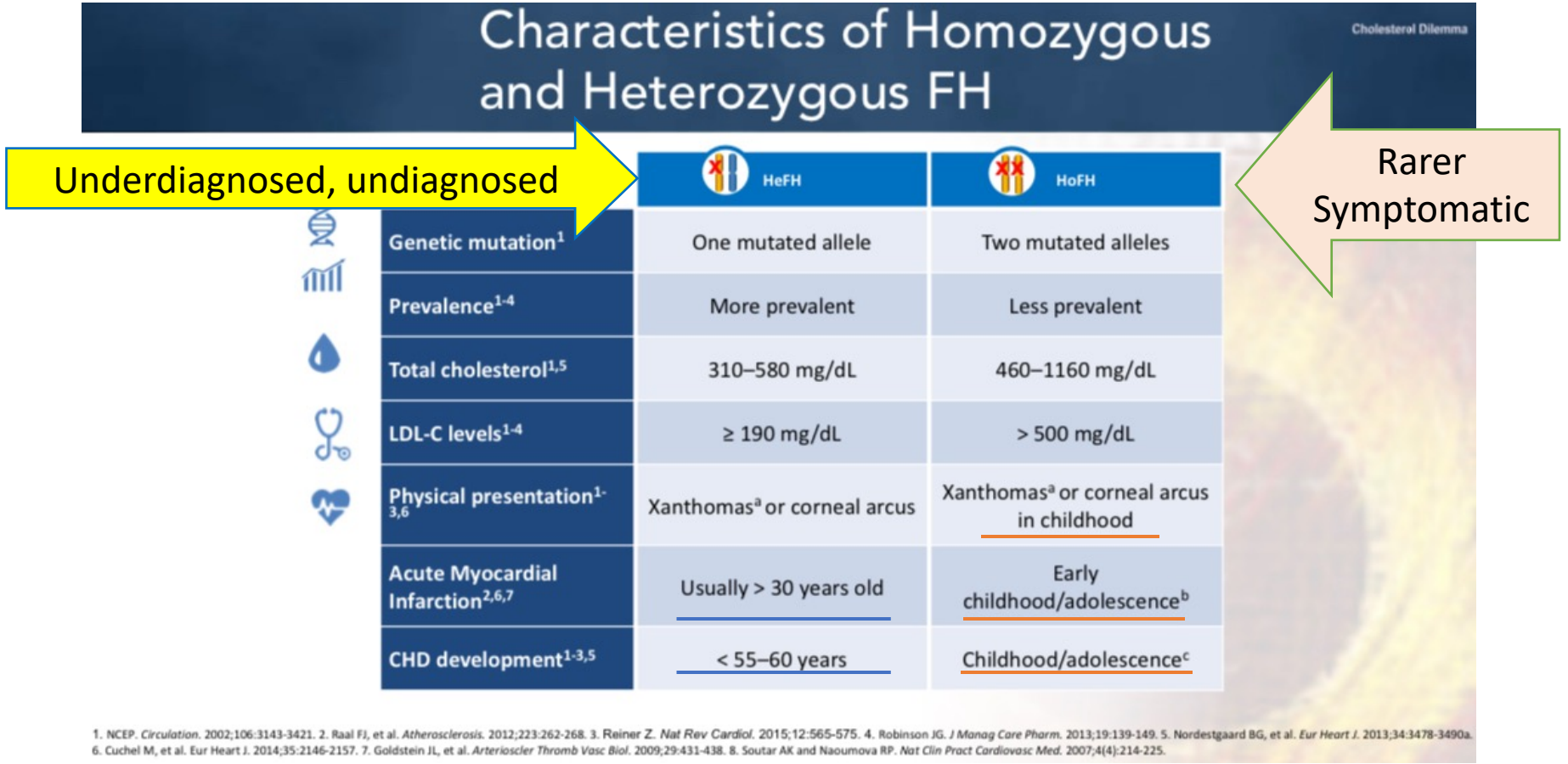
FM

- Diagnostic tests
  - Lipid panels: Cholesterol, LDL
  - Genetic analysis: mutations in LDLR, PCSK9 and APOB genes
- Screening
  - Universal: at age 10 y (9-11 y and 17-21 y)
  - Selective: at risk - there is a (+) family history of premature CVD or death
    - Screening at 5-10 years, college applicants (~18 years)
- Cascade screening - cost effective
  - ↓ the 10 y incidence of coronary heart disease (CHD) from 50% to 25%
  - An overall gain of ~25 life-years and 29 quality-adjusted life years

J Clin Lipidol 2014; 8: 390-400.

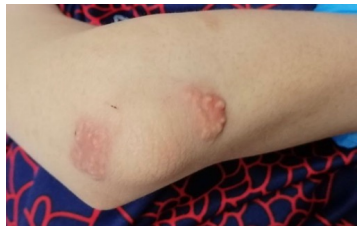
Cholesterol Metabolism – Dr. LE Santos

- Characteristics of homozygous and heterozygous FH



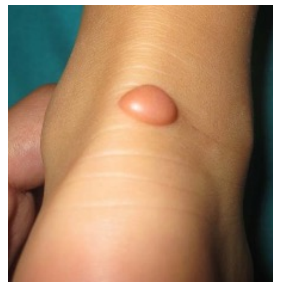
Cases of FH, homozygous (seen in ped endo clinics)

18 y, F

- Strong family hx of premature CVD
- Tendon xanthomas 
- Atherosclerotic retinopathy
- LDL Cholesterol > 2000 mg/dL
- Treatment: statin (Simvastatin)

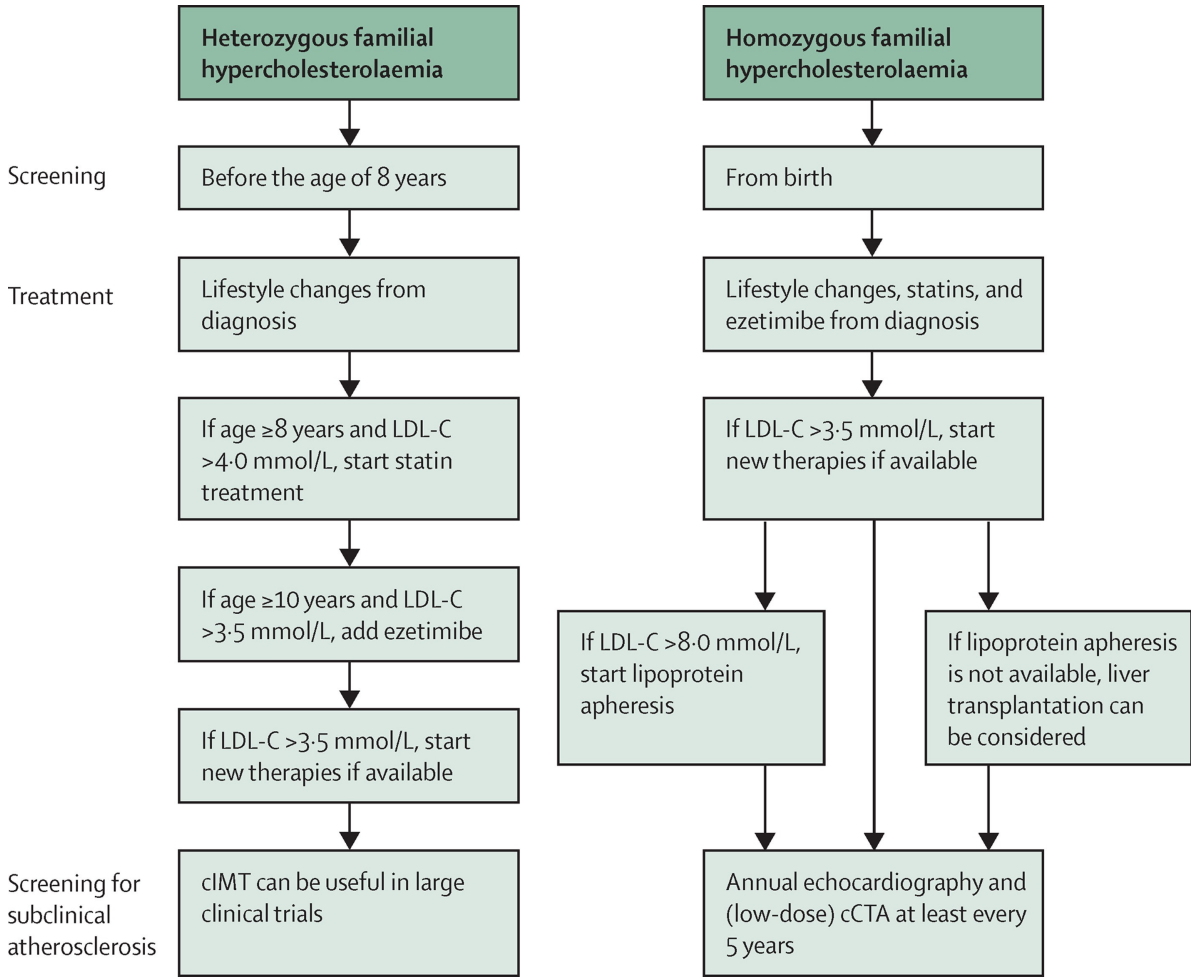
Data of K Albano. PGH

6y, F

- Maternal grandmother died at ~ 46y
- Tendon xanthoma 
- LDL Cholesterol > 500-600 mg/dL
- Treatment: statin (atorvastatin)

Data of S Cua. MDH

FH in children – The LANCET Child & Adolescent Health. 2021



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Advances in familial hypercholesterolaemia in children

M Doortje Reijman, MD • D Meeike Kusters, MD •
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Key Points of Ped Endo Reaction

- FH is undiagnosed/ underdiagnosed in children
  - Homozygous is symptomatic and CHD can occur in childhood
  - Heterozygous may be asymptomatic but LDL level is already high
- Early screening and diagnosis is critical to reducing the burden of disease in adulthood
  - Universal screening
  - Selective screening
- Registry - research registry
- Improve the understanding of FH: multisectoral and multidisciplinary
  - Health seeking behavior of parents/ patients
  - Primary health care workers
  - School administrators and health teams
  - Government agencies