

Prevalence, Co-Morbidities and Treatment of Clinically-Defined Severe Familial Hyperlipidemias



in Patients with Early CHD in a Local ACC NCDR® CathPCI Registry

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BACKGROUND

Familial hypercholesterolemia (FH) and familial combined hyperlipidemia (FCH) are associated with early CHD events but are underdiagnosed and undertreated. We performed targeted screening to determine the prevalence, co-morbidities, and outcomes of clinically defined FH and FCH in young patients in our NCDR® CathPCI Registry who had undergone recent PCI.

METHODS

We queried the NCDR® CathPCI Registry at 2 hospitals in Rhode Island to identify patients ≤ 50 years who underwent PCI between 2015-2017, and extracted details of their index events. We cross-referenced this list with our EHR to extract the highest total cholesterol (TC) level since 2000, follow-up labs, and family history. Those without lipid labs (n=13) were excluded. FH was defined by criteria from the AHA [LDL-C ≥ 190mg/dl at age ≥ 21 Yrs]; Dutch Lipid Clinic Network [Possible, Probable or Definite FH based on clinical factors + LDL-C +/- DNA testing]; and MEDPED framework [LDL-C by decade of life]. FCH was presumed if TC was ≥240, triglycerides (TG) ≥225 and non-HDL-C ≥190mg/dl. Results were compared using 1-way ANOVA for continuous and chi-square test for categorical variables, with p<0.05 for significance.

RESULTS

Table 1: Among 571 patients ages 23.4 to 50.9 years, prevalence of clinical FH was 7.9% and of FCH was 10.7%. In the FH group, mean TC was 305.2 ± 44.5 mg/dl, LDL-C 235.6 + 38.6 mg/dl, and TG 133.6 ± 42.5 mg/dl, and in the FCH group mean TC was 304.9 ± 117.6 mg/dl, LDL-C 172.2 ± 30.7 mg/dl, and TG 700.7 ± 749.4 mg/dl, all higher (p<0.01) vs. the referent (Table). FCH subjects had more DM (57.4% vs. 29.9% in the referent), prior MIs (32.8% vs. 17.9% in the referent), and admission lipid med use (54.1% vs. 34.8% in the referent), p<0.01 for all. FH patients had non-significantly higher rates of prior MI and lipid med use vs. referent. Smoking prevalence was >50% in all groups. **Table 2:** ~85% underwent emergent or urgent PCI. Burden of disease (# vessels or stents) did not differ between groups. Among those with available F/U lipids, an LDL of ≤70mg/dl at ≥1 Yr was found in 18% with FH, and 40% with FCH.

VALUE PROPOSITION

FH and FCH raise the risk of early and recurrent CHD events but detection and treatment are suboptimal. Targeted screening during early MI and PCI appears to be of high yield and is low in cost. This strategy, coupled with better care management models, could improve FH and FCH detection, family screening, primary and secondary prevention, and health and economic outcomes.

CONCLUSION

Prevalence of FH and FCH is high in patients undergoing early PCI, and gaps in prevention are large. Better screening and care management are needed to improve health and economic outcomes in this high-risk patient population.

Almost **20%** of young patients age ≤ 50 Yr in our NCDR® CathPCI registry met clinical criteria for **Familial Hypercholesterolemia** or **Familial Combined Hyperlipidemia**

1/4 to 1/3rd had suffered a prior MI

Missed opportunities for prevention were large

These data support **targeted screening** for FH and FCH in young patients undergoing early PCI, and **population health management** approaches to improve **secondary prevention, family screening for primary prevention, and health and economic outcomes**

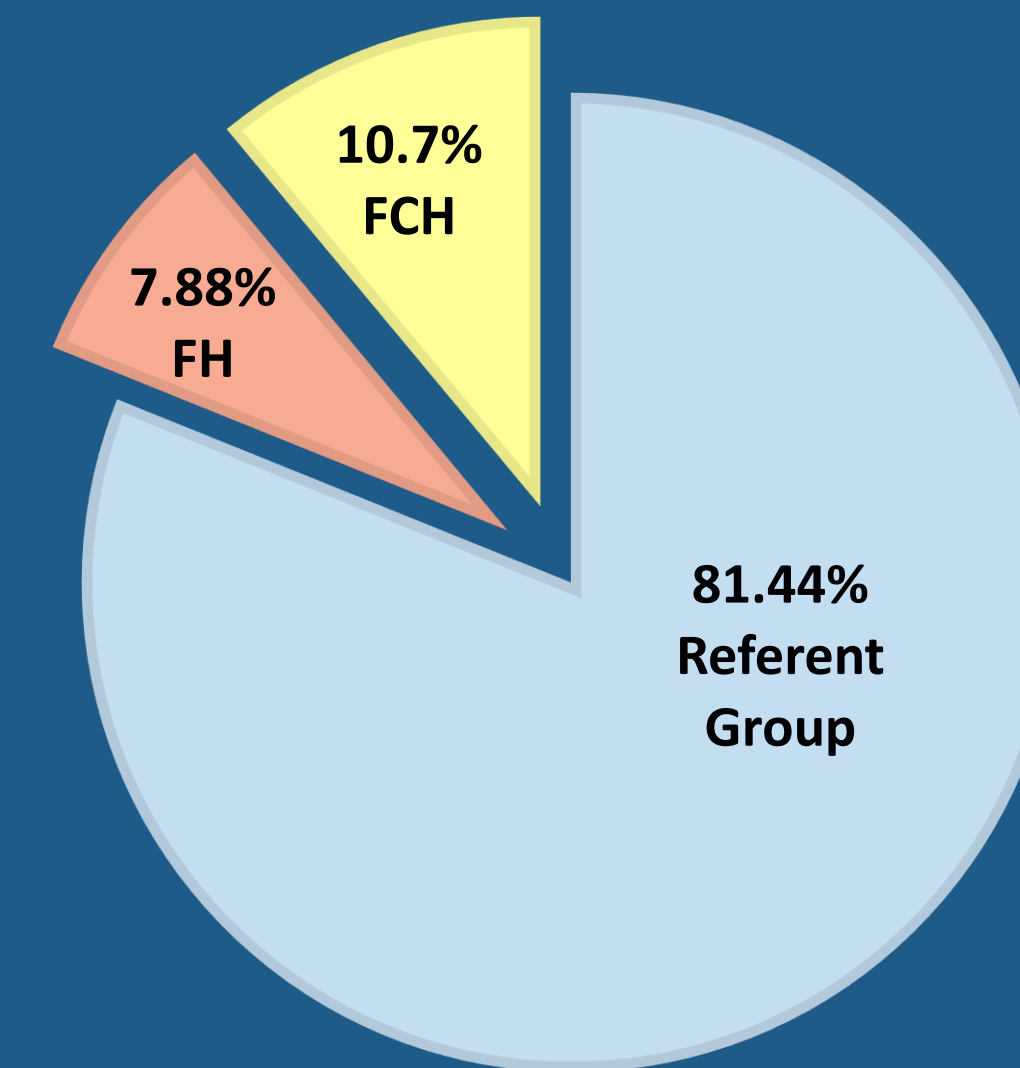


TABLE 1. BASELINE CHARACTERISTICS

	REFERENT N=465 (81.44%)	FH GROUP N=45 (7.88%)	FCH GROUP N=61 (10.70%)	P-Value
Age (Yrs), Mean ± SD	44.7 ± 5.2	43.8 ± 6.2	44.73 ± 5.38	0.59
Sex (Male), N (%)	354 (76.1)	33 (73.3)	44 (72.13)	0.77
Race (White), N (%)	413 (88.8)	40 (88.8)	57 (93.44)	0.54
Hypertension, N (%)	278 (59.7)	29 (64.4)	43 (70.49)	0.23
Diabetes, N (%)	139 (29.9)*	9 (20.0)	35 (57.38)*	*<0.01
Smoking, N (%)	249 (53.5)	25 (55.5)	35 (57.38)	0.80
Prior MI, N (%)	83 (17.9)	12 (26.6)	20 (32.79)	<0.01
Heart Failure, N (%)	36 (7.7)	2 (4.4)	7 (11.48)	0.39
Prior PCI, N (%)	78 (16.7)	9 (20.0)	18 (28.51)	0.04
Prior CABG, N (%)	7 (1.5)	2 (4.4)	3 (4.92)	0.12
PAD, N (%)	25 (5.4)	2 (4.4)	6 (9.84)	0.34
Total Cholesterol	188.7 ± 37.0	305.2 ± 44.5	304.87 ± 117.67	<0.01
HDL-Cholesterol	38.3 ± 10.3*	44.2 ± 13.3*	36.30 ± 8.68	*< 0.01
Triglycerides	179.9 ± 153.5	133.6 ± 42.5	700.65 ± 749.42	<0.01
LDL-Cholesterol	119.3 ± 33.2	235.6 ± 38.6	172.18 ± 30.70	<0.01
Non-HDL-Cholesterol	150.4 ± 36.4	260.9 ± 40.1	268.57 ± 119.74	<0.01
Admission Lipid Med	159 (34.8)*	19 (42.2)	33 (54.1)*	*<0.01

TABLE 2. STUDY OUTCOMES

	REFERENT	FH GROUP	FCH GROUP	P-Value
CAD Event Type, n (%)				NS
STEMI	191 (41.1)	15 (33.3)	17 (27.87)	
NSTEMI	170 (36.6)	13 (28.9)	26 (42.62)	
UA	77 (16.5)	13 (28.9)	16 (26.23)	
Stable Angina	16 (3.4)	3 (6.6)	2 (3.28)	
Others	11 (2.4)	1 (2.2)	0 (0)	
Catheterization, n (%)				0.40
Emergent	193 (41.5)	15 (33.3)	19 (31.15)	
Urgent	224 (48.2)	23 (51.1)	34 (55.74)	
Elective	48 (10.3)	7 (15.6)	8 (13.11)	
# Lesions, n (%)				0.64
1	310 (66.6)	29 (64.4)	40 (65.57)	
2	116 (24.9)	11 (24.4)	13 (21.31)	
3	27 (5.4)	5 (11.1)	6 (9.84)	
>4	12 (2.5)	0(0)	2 (3.28)	
# Stents, n (%)				0.48
0	21 (4.52)	0 (0)	0 (0)	
1	290 (62.3)	26 (57.7)	36 (59.02)	
2	105 (22.5)	14 (31.1)	17 (27.87)	
3	30 (6.45)	5 (11.1)	6 (9.84)	
4	14 (3.01)	0 (0)	1 (1.64)	
5	3 (0.65)	0 (0)	1 (1.64)	
6	2 (0.43)	0 (0)	0 (0)	
Hospital Death, n (%)	8 (1.72)	0 (0)	1 (1.64)	0.67
LDL-C ≤ 70 at 1 Yr	N/A	18%	40%	

DISCLOSURE: Dr. Aspry is a Site P.I. for trials by Amgen, Novartis, Esperion, and AKCEA.