Case Discussions: Treatment Strategies for High Risk Populations

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Most Common Reasons for Referral to the Baylor Lipid Clinic

- Severe genetic dyslipidemias:
  - Heterozygous FH
  - Familial combined hyperlipidemia
  - Severe hypertriglyceridemia (Type V)

- Statin intolerance (myalgia/myositis):
  - Normal CK with myalgias
  - Abnormal baseline CK (usually < 5 X ULN)
  - Increase in CK from baseline (usually < 5 X ULN)

- Liver issues:
  - Abnormal baseline ALT (usually < 3X ULN)
  - Increase of normal ALT (usually to < 3X ULN)

- Inadequate drug control of dyslipidemia
Most Frequent Lipid Drug Safety Concerns from Our Referring Physicians

- Maximum dose statin and myositis (atorvastatin 80 mg, rosuvastatin 40mg)
- “Statin Plus” therapies
  Use a fibrate or niacin?
- Chronic kidney disease and use of statins alone or in combination (especially fenofibrate)
- Solid organ transplants and lipid drug use
- Other drug/drug interactions with statins
What is Lipid Residual Risk?

- Discordance between LDL-C and particle number
  - TGRL disturbance
  - Insulin resistance
- Low HDL-C or HDL-P
- High Lp(a)
- Familial hypercholesterolemia
Case

- 52 y.o. male cardiologist
- Normal wt, normal BP, no RF, exercises regularly
- Sudden chest pain, urgent PCI; 2 vessel nonobstructive CAD
- Lipid profile 1 yr earlier (no treatment):
  - TC 190 mg/dL
  - TG 130 mg/dL
  - HDL 43 mg/dL
  - LDL 121 mg/dL
Case

- His lipid profile on high intensity statin:
  - TC146 mg/dL
  - TG 120 mg/dL
  - HDL 43 mg/dL
  - LDL 71 mg/dL

- Do you leave him here or do you need additional information?
Lp(a) 120 mg/dL
Apo B 70 mg/dL
LDL-P 710

What would you do now?
A 59-year old black female has history of elevated cholesterol and triglycerides for 2 years and is referred to the lipid clinic for evaluation and treatment of her dyslipidemia. She has been on fenofibrate 145 mg for the last six months. Her labs 3 months ago on that therapy:

- Total cholesterol 288 mg/dl, triglycerides 357 mg/dl, HDL 40 mg/dl, LDL-C 177 mg/dl, nonHDL-C 248 mg/dl.

She has chronic muscle pain, probably due to fibromyalgia. She has a sedentary life style without any exercise program.
Case

Past medical history:

She has a complex medical history with fibromyalgia, migraines, asthma, hypothyroidism, GERD and hypertension. No known history of CHD or other vascular disease.

Medications:

Atenolol 50 mg qd, Losartan 100 mg qd, Levothyroxine 0.15 mg qd, Singulair 100 mg qd, Celebrex 200 mg qd, Pepcid 30 mg qd, Prednisone 5mg qd, Fenofibrate 145 mg qd

Family history:

Father died at age 85. Mother died at 76 and had diabetes and renal failure. No known family history of dyslipidemias.
Case

Physical examination:
BP 140/96, weight 181 lb, waist circumference 38 in., BMI 30; normal cardiac exam and no vascular bruits.

Labs:
One year ago (no lipid treatment):
  TC 270 mg/dl, TG 500 mg/dl
3 months ago (on fenofibrate):
  TC 288 mg/dl, TG 357 mg/dl, HDL 40 mg/dl,
  LDL 177mg/dl, nonHDL-C 248 mg/dl, AST 39, ALT 35, Glucose 115, TSH normal, CPK 604, urinalysis - trace protein
Case

Assessment:

1. Primary prevention; Risk factors: age, hypertension

2. 10 year CHD risk: 14% pooled cohort
   Intermediate risk by NLA

3. Metabolic syndrome criteria: Meets 5/5
   Systolic BP 140, diastolic 96
   Waist 38"
   Fasting glucose 115 mg/dl
   TG 500 mg/dl
   HDL-C 40 mg/dl

4. Chronic myalgias and elevated CK (< 5X ULN)
Case

Treatment options:

- **Intensify lifestyle habits and:**
  1. Add statin (low dose) to fenofibrate
  2. Stop fenofibrate and start statin, with titration to max dose.
  3. Stop fenofibrate and start statin, with plan to add ezetimibe
  4. Add prescription fish oils to option 1 (statin and fenofibrate)
  5. Add bile acid resin or ezetimibe to #1 and 4
Case

• 22-year-old Caucasian male presents for evaluation of elevated cholesterol noted for several years by his family physician.

• He exercises around ~1 hour weekly on weekends, does not follow a low-fat diet, and doesn't smoke.

• He takes no medications, although a statin recommended by his physician
Family history

No consanguinity
• **Initial exam:** BP 130/80, weight 159 lb (72kg), height 5'9" (175cm), BMI 23.5. No carotid bruits, heart normal exam without murmur, normal pulses.

• **No tendon xanthomas, Xanthelasma or corneal arcus.**

• **Lab results:** TC 401 mg/dL, TG 198 mg/dL, HDL-C 36 mg/dL, LDL-C 325 mg/dL
This patient's condition is probably not related to which of the following:

A. LDL-R mutation.
B. Gain-of-function mutation in PCSK9
C. Defective APOB
D. Loss-of-function mutation in PCSK9
E. ARH - Autosomal recessive hypercholesterolemia
F. D and E.
Lab test results

- TC 390 mg/dL
- TG 180 mg/dL
- HDL-C 35 mg/dL
- LDL-C 320 mg/dL
- Lp(a) 33 mg/dL
- Glucose 88 mg/dL
- ALT/AST normal
- TSH normal
- UA: no protein
What is his CHD risk category?

A. Primary prevention, 10-year risk <5%
B. Primary prevention, 10-year risk 5 - 10%
C. Statin benefit group 2
D. High lifetime CVD risk
What is your LDL-C goal for therapy?

A. <190 mg/dL
B. <160 mg/dL
C. <130 mg/dL
D. <100 mg/dL
E. > 50% reduction from baseline
What treatment would you advise?

A. Therapeutic lifestyle change (TLC) alone
B. TLC and ezetimibe
C. TLC and bile acid resin
D. TLC and atorvastatin 10 mg
E. TLC, atorvastatin 80 mg
F. TLC, atorvastatin 80 mg and ezetimibe
Should we do additional diagnostic tests for risk assessment?

A. Stress testing  
B. CT scan for coronary calcium  
C. Echocardiogram  
D. None of the above
Case

32 y.o. Asian American female with FHx of high cholesterol and premature CHD in father. Only medication is BCP, and she doesn’t smoke. On exam, BP 130/70, BMI 26. No tendon xanthomas and cardiac exam has systolic murmur at 2nd RICS.

Lab: all normal except TC 458 mg/dL, LDL 400 mg/dL, HDL 40 mg/dL, Lp(a) 210 mg/dL

CACS 360 and stress echo normal but shows mild AS
She is started on simvastatin 40 mg + cholestyramine 16 gm/day + niacin 1000 m/day. Repeat LDL 210 mg/dL.

At age 39 she had episode of exertional chest pain. Cath showed tight proximal LAD lesion, with successful PCI. Echo showed aortic gradient of 40 and valve area 1.1 cm²

Lipid Rx: atorvastatin 80 mg + colesevelam 3.8 gm + ezetimibe 10 mg. LDL 140 mg/dL
At age 43 had progressive DOE and chest pain. Cath showed no new obstructive lesions but aortic gradient > 50 and valve area 0.8 cm². Successful AVR

Lipid Rx: rosuvastatin 40 mg + colesevelam 3.8 gm + ezetimibe 10 mg. LDL 100-110 mg/dL

At age 50, enrolled in phase 3 study of anti-PCSK9 monoclonal Ab, and in open-label phase, LDL 30 mg/dL, apo B 38 mg/dL and Lp(a) 117 mg/dL