LIPID PROFILE, COMPLETE (In Adults)

LIPID PROFILE, COMPLETE, SERUM (Spectrophotometry, Agarose gel Electrophoresis)		
Sample appearance		
Cholesterol	mg/dL	<200
Triglycerides	mg/dL	<150
HDL, Cholesterol	mg/dL	
LDL, Cholesterol	mg/dL	
VLDL, Cholesterol	mg/dL	<30
Non HDL Cholesterol	mg/dL	<130
Cholesterol: HDL Ratio		3.30-4.40
Lipoprotein electrophoresis		
HDL	%	15.1-39.9
LDL	%	42.3-69.5
VLDL	%	2.0-31.2
Chylomicrons	-	Nil

HDL Cholesterol	**Gender**
>50	Females
>40	Males

Interpretation

NATIONAL LIPID ASSOCIATION RECOMMENDATIONS (NLA-2014)	TOTAL CHOLESTEROL in mg/dL	TRIGLYCERIDE in mg/dL	LDL CHOLESTEROL in mg/dL	NON HDL CHOLESTEROL in mg/dL
Optimal	<200	<150	<100	<130
Above Optimal	-	-	100-129	130 - 159
Borderline High	200-239	150-199	130-159	160 - 189
High	>=240	200-499	160-189	190 - 219
Very High	-	>=500	>=190	>=220

REMARKS	Cholesterol : HDL Ratio
Low risk	3.3-4.4
Average risk	4.5-7.1
Moderate risk	7.2-11.0
High risk	>11.0

Note: 1.Measurements in the same patient can show physiological& analytical variations. Three serial samples 1 week apart are recommended for Total Cholesterol, Triglycerides, HDL& LDL Cholesterol

2. NLA-2014 identifies Non HDL Cholesterol(an indicator of all atherogenic lipoproteins such as LDL , VLDL, IDL, Lpa, Chylomicron remnants)along with LDL-cholesterol as co- primary target for cholesterol lowering therapy. Note that major risk factors can modify treatment goals for LDL &Non HDL.

3.Apolipoprotein B is an optional, secondary lipid target for treatment once LDL & Non HDL goals have been achieved

4. Additional testing for Apolipoprotein B, hsCRP, Lp(a) & LP-PLA2 should be considered among patients with moderate risk for ASCVD for risk refinement

Comment

A variety of genetic conditions are associated with accumulation in plasma of specific class of lipoprotein particles. The critical first step in managing lipid disorder is to determine the class or classes of lipoprotein that are increased or decreased in a patient. Frederickson classification can be helpful in this regard. The hyperlipidemic status should be evaluated to determine if it is a primary lipoprotein disorder or secondary to metabolic disease. The diagnosis of primary hyperlipidemia is made after secondary causes have been ruled out. It is important to diagnose primary lipid disorder since the underlying etiology has significant effect on development of CHD, on response to drug therapy, and on the management of other family members.Type II b is the most commonly inherited lipid disorder, occurring in approximately 1 in 200 persons.Familial hypertriglyceridemia (FHTG) is a relatively common

(1:500) autosomal dominant disorder of unknown etiology. It is important to consider & rule out secondary causes of hypertriglyceridemia (Obesity, Type 2 DM, Alcoholism, Renal failure, Cushing's syndrome etc.) before making the diagnosis of FHTG.

FREDRICKSON CLASSIFICATION

Type of Hyperlipoproteinemia	Molecular defect	Estimated incidence	Lipoprotein elevated	Cholesterol, Total (mg/dL)	Triglyceride (mg/dL)	Serum Appearance
I Familial Chylomicronemia Syndrome	Lipoprotien lipasedeficiency; Apo C II deficiency	1 in 1,000,000	Chylomicrons	+ to ++ 200-400	++++ > 3000	Milky
II a Familial Hypercholesterolemia	Mutation in LDL receptor, Apo B 100	1 in 500	LDL	+++ 300-1000	Normal	Clear
II b Familial Combined Hyperlipidemia	Unknown	1 in 200	LDL & VLDL	++ to +++ 280- 350	++ 200-500	Clear to slightly turbid
III Familial Dysbetalipoproteinemia or Familial broadbetadisease	Genetic variation in APO E	1 in 10,000	Chylomicron and VLDL remnant (IDL)	++ to +++ 300- 500	++ to +++ 200- 900	Clear to slightly turbid
IV Familial hypertriglyceridemia	Unknown	1 in 500	VLDL	Usually <270	++ 200-1000	Turbid
V Familial hypertriglyceridemia	Unknown	1 in 500	Chylomicron & VLDL	++ to +++ <500	++++ <3000	Milky

LIPID PROFILE, COMPLETE (In children)

LIPID PROFILE, COMPLETE, SERUM (Spectrophotometry, Electrophoresis)		
Cholesterol	mg/dL	<170

Triglycerides	mg/dL	<150
HDL, Cholesterol	mg/dL	40-60
LDL, Cholesterol	mg/dL	<110
VLDL, Cholesterol	mg/dL	<30
Non HDL Cholesterol	mg/dL	
Cholesterol: HDL Ratio		3.30-4.40
Lipoprotein electrophoresis		
HDL	%	15.1-39.9
LDL	%	42.3-69.5
VLDL	%	2.0-31.2
Chylomicrons	-	Nil

REMARKS	TOTAL CHOLESTEROL in mg/dL	TRIGLYCERIDE in mg/dL	LDL CHOLESTEROL in mg/dL
Optimal	<170	<150	<110
Borderline High	171-199	150-199	111-129
High	>=200	200-499	>=130
Very High	-	>=500	-

REMARKS	Cholesterol : HDL Ratio
Low risk	3.3-4.4
Average risk	4.5-7.1
Moderate risk	7.2-11.0
High risk	>11.0

Note: 1. Measurements in the same patient can show physiological& analytical variations. Three serial samples 1 week apart are recommended for Total Cholesterol, Triglycerides, HDL& LDL Cholesterol.

2. As per NCEP guidelines, all adults above the age of 20 years should be screened for lipid status. Selective screening of children above the age of 2 years with a family history of premature cardiovascular disease or those with at least one parent with high total cholesterol is recommended

Comment

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determine if it is a primary lipoprotein disorder or secondary to metabolic disease. The diagnosis of primary hyperlipidemia is made after secondary causes have been ruled out. It is important to diagnose primary lipid disorder since the underlying etiology has significant effect on development of CHD, on response to drug therapy, and on the management of other family members. Type II b is the most commonly inherited lipid disorder, occurring in approximately 1 in 200 persons.Familial hypertriglyceridemia (FHTG) is a relatively common (1:500) autosomal dominant disorder of unknown etiology. It is important to consider & rule out secondary causes of hypertriglyceridemia (Obesity, Type 2 DM, Alcoholism, Renal failure, Cushing's syndrome etc.) before making the diagnosis of FHTG.

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