Disorders of lipoprotein metabolism (1.LF, NT)

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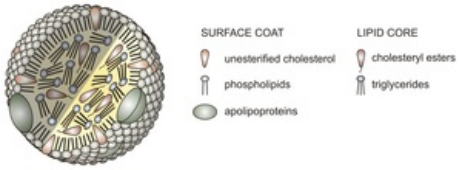
Lipid transport:

- Albumin - non-esterified MK
- alpha 2-microglobulin - retinol
- Lipoproteins - non-polar lipids



Scheme of the lipoprotein particle

Lipoprotein division

1. Using ultracentrifugation: based on hydrated density: VLDL, IDL, LDL, HDL
2. Electrophoretic: alpha-lipoproteins, pre-beta-lipoproteins, beta-lipoproteins, chylomicrons
3. Immunochemical methods: apo A, apo B, apo C, apo D, apo E, ...

Apolipoprotein function

- They are cofactors of enzymes efficient in lipoprotein metabolism
- They mediate the binding of lipoprotein particles to specific receptors
- They are structural proteins of lipoprotein particles
- Participates in the transfer or exchange of lipid particles between individual lipoproteins

Meaning of HDL

- Reverse transport of cholesterol from cells to the liver
- Prevents oxidation of LDL particles, replaces oxidized LDL components with non-oxidized ones
- HDL paraoxonase enzyme inhibits LDL oxidation and destroys biologically active oxidized phospholipids

Examination

Basic examination of lipid metabolism

- Cholesterol: 3.8 - 5.2 mmol / l
- TAG: 0.9 - 1.7 mmol / l
- HDL:> 1.1 mmol / l
- LDL: <4.5 mmol / l

Target values of Czech society for atherosclerosis

- Cholesterol: 4.5 - 5.0 mmol / l (for low-risk people up to 6.0 mmol / l)
- HDL> 1.1 mmol / l
- LDL <2.5 mmol / l in secondary prevention (<3 - 3.5 mmol / l in high risk, <4 - 4.5 mmol / l in low risk)
- TAG <1.7 mmol / l (2.0)

Further examination

Friedwald LDL cholesterol calculation

- the formula cannot be used if the TAG level> 4.5 mmol / l
- *LDL - chol. = total chol. - (HDL - chol. + TAG x 0.37) mmol / l*

Atherogenic Index (AI)

AI = (total cholesterol - HDL) / HDL

Apo A-I and apo B-100 concentrations, lipoprotein electrophoresis

Division of Hyperlipoproteinemias and Hypolipoproteinemias

Hypercholesterolemia	Primary hypercholesterolemia	Familial hypercholesterolemia
		Familial defect ApoB100
		Polygenic hypercholesterolemia
Combined hyperlipidemia	Familial combined hyperlipidemia	
	Familial dysbetalipoproteinemia	
Hypertriacylglycerolemia	Primary hypertriacylglycerolemia	Familial hyperlipoproteinemia type V.
		Familial hyperchylomikronemia
		Familial hypertriacylglycerolemia
Hypolipoproteinemia	Familial hypobetalipoproteinemia, Abetalipoproteinemia, Hypoalfalipoproteinemia, Analfalipoproteinemia (Tangier disease)	
Cholesterol storage disorders	Wolman's disease (*lysosomal acid lipase deficiency*), Cholesterol ester deposition disease, LCAT familial deficiency	
Hyperalfaliporoteinemia	Familiar hyper-alfa-lipoproteinemia	
Secondary hyperlipoproteinemia	Type I diabetes mellitus, Type II diabetes mellitus, Hypothyroidism, Nephrotic syndrome, Chronic renal insufficiency, Primary biliary cirrhosis, Obesity - TAG, Alcoholism - TAG, Hormone therapy, diuretics, Anorexia nervosa	

Links

Related Articles

Sources

- MRÁZOVÁ, K. *Poruchy metabolismu lipoproteinů* [online]. [cit. 2012-03-16]. <https://el.lf1.cuni.cz/p76847653/>.