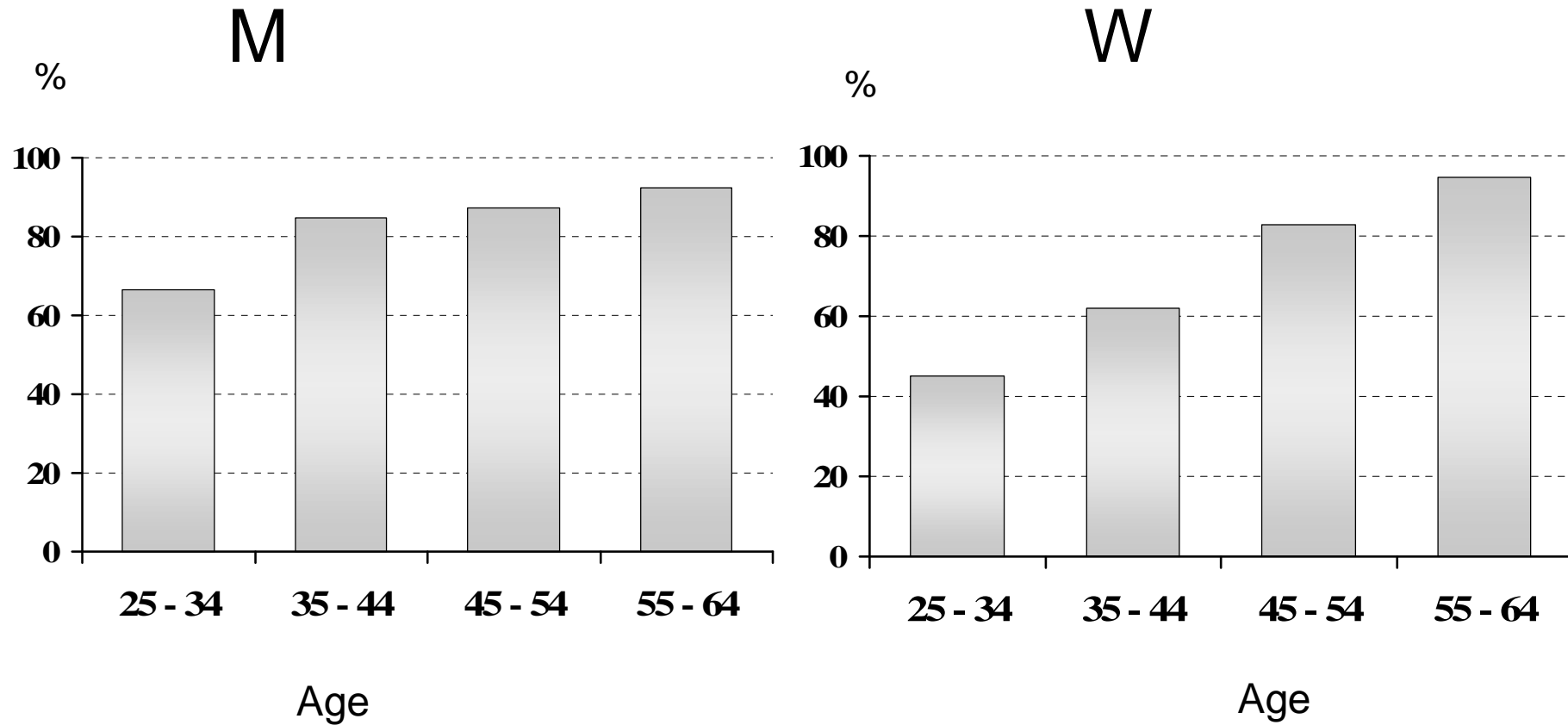


DISORDERS OF LIPID METABOLISM

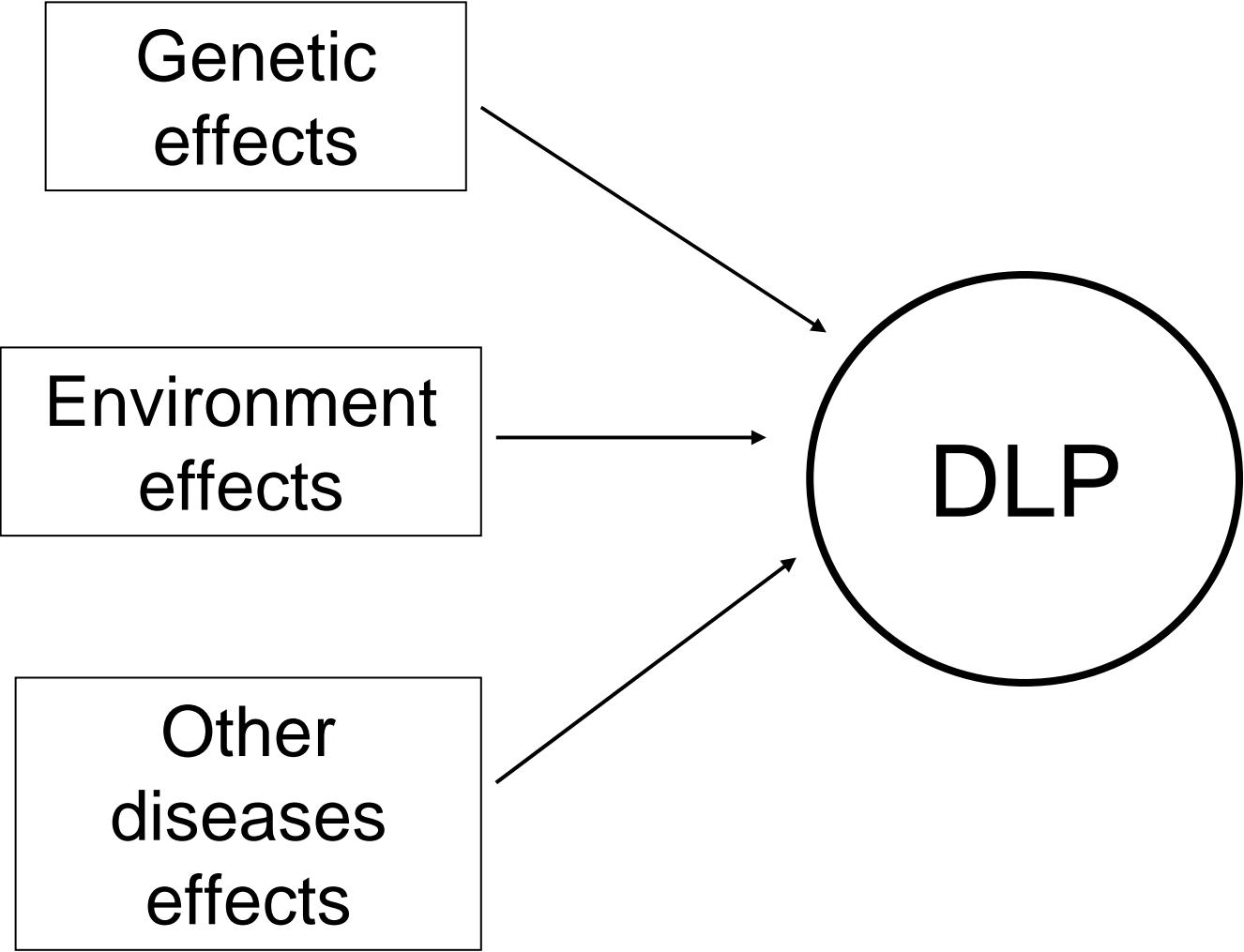
Dyslipidemias

Dyslipidemia in the Czech population



TC \geq 5.0 or HDL-ch. $<$ 1.0 or LDL-ch. \geq 3.0 or TG \geq 2 mmol/l
or treatment with hypolipemic drugs

Mechanism of DLP development



Cholesterol as a risk factor of AS

- CHD: **Yes**
- PAD: ??
- Stroke: Ano
- Carotid art.: Yes

Physiologic levels of blood lipids - „healthy“ population, „primary“ prevention

- Total cholesterol < 5.0 mmol/l
- LDL cholesterol < 3.0 mmol/l
- Triglycerides < 1.7 mmol/l
- HDL cholesterol > 1.0 mmol/l
- Regardless of age and sex

Goal levels of blood lipids for high risk patients

- Total chol. < **4,5** mmol/l
- LDL chol. < **2,5** mmol/l

- HDL chol. (men) > 1.0 mmol/l
- HDL chol. (women) > 1.2 mmol/l
- Triglycerides: < 1.7 mmol/l

Goal levels of blood lipids for very high risk patients

- Total chol. < **4,5** mmol/l
- LDL chol. < **2,0** mmol/l
 - ▶ < **1,8** mmol/l
- HDL chol. (men) > 1.0 mmol/l
- HDL chol. (women) > 1.2 mmol/l
- Triglycerides: < 1.7 mmol/l

Therapeutic classification of DLP

- Hypercholesterolemia
- Hypertriglyceridemia
- Mix hyperlipidemia

- Primary (inherent) DLP
- Secondary DLP

Secondary DLP

- Subject to endocrine diseases
- Liver diseases
- Kidney diseases
- Drugs-induced DLP
- Toxonutritive DLP
- DLP induced by environmental influences

DLP due to endocrine diseases

- Diabetes mellitus
 - Undercontrolled
- Hypothyreosis
- Hyperfunction of suprarenal glands
 - Cushing disease
- Pregnancy (physiological DLP)

DLP due to hepatic diseases

- Cholestasis
 - Primary biliary cirrhosis
- Parenchyma liver disease
 - Hepatitis (no steatosis)

DLP due to renal diseases

- Nephrotic syndrome
- Chronic renal insufficiency
 - Haemodialysis, peritoneal dialysis
- Renal transplantation

Drugs-induced DLP

- Antihypertensive drugs
 - High doses of
 - ★ Thiazid diuretics, non-selective β -blockers
- Immunosuppressive
 - Cyclosporine A
 - Corticosteroides

Toxonutritive DLPs: alcohol

- Alcohol increases blood lipids !!!
- This effect is dose-dependent
 - ▶ Individual sensitivity to the alcohol
- This type of DLP is not atherogenic
- Leading cause of secondary DLP resistant to the therapy

DLPs induced by the environment influences

- Food
 - ▶ High intake of saturated fats, glucose, cholesterol
 - ▶ Genetic disposition
- Smoking
 - ▶ ↓ HDL-Ch
- Physical inactivity
 - ▶ ↓ HDL-Ch, ↑ Tg

Primary DLP (genetic DLP)

- Hypercholesterolemia
 - ▶ Familial hypercholesterolemia
 - ▶ Polygenic HCH
- Hypertriglyceridemia
 - ▶ Familial HTg
- Mix DLP
 - ▶ Familial combined DLP

Familial hypercholesterolemia

- Cause
 - Defective LDL-receptor gene
 - Defective apo B gene
- Frequency: 1: 500 (heterozygote type)
- Heredity: autosomal dominant
- Pathophysiology: catabolism of LDL particles is very slow
- Laboratory: Chol. 9-15 mmol/l
 - Physiologic level of Tg, HDL-ch)
- Premature CHD
- Xantomatosis is relative rare

Familial hypertriglyceridemia

- Cause: ??
 - Interaction of several genes (apo C, LPL, B)
 - Environment influence
- Frequency: 1:300
- Heredity: autosomal dominant
- Pathophysiology: ↑ synthesis, ↓ catabolism of VLDL particles
- Laboratory: Tg > 3 mmol/l (Ch: ↔↑), ↓ HDL-C

Familial combined HLP

- Cause: not known
 - ▶ Interaction of several genes (apo B, C, E, LPL)
 - ▶ Environment influence
- Frequency: 1:100
- Heredity: autosomal dominant
- Pathophysiology
 - ▶ ↑ synthesis of apo B a Tg
 - ▶ ↓ catabol. of VLDL, LDL
- Laboratory: ↑Tg, ↑ Ch (LDL-Ch), apo B
- Premature CHD

Polygenic hypercholesterolemia

- Cause: not known
 - Interaction of several genes (apo B, E)
 - Environment influence
- Frequency: 1:100-200
- Pathophysiology: ↑ synthesis, ↓ catabol. of LDL
- Laboratory: Chol 6 - 8 mmol/l (Tg = N)
- Premature CHD

Non-pharmacology treatment

- Stop smoking !!!
- Physical activity, exercise
- Weight lose
 - In case of overweight or obesity
- Diet

Pharmacotherapy of DLP

- Only if CHD risk is high
 - ▶ Patients with CHD, or CHD equivalent
 - ▶ Patients with diabetes mellitus
 - ▶ Patients with familial hypercholesterolemia
- Other peoples
 - ▶ Only if other risk factors are present
 - ★ Age (> 45 men, > 55 women)
 - ★ Smoking, hypertension

Pharmacotherapy of DLP

<p>Decrease of LDL cholesterol</p>	<p>Statins Ezetimibe Resins</p>
<p>Decrease of triglycerides Elevation fo HDL cholesterol</p>	<p>Fibrates Nicotinic acid</p>