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CO register

Paradoxical worsening of lipid metabolism after successful treatment of primary aldosteronism

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Context:

Primary aldosteronism (PA) describes the most frequent cause of secondary arterial hypertension. Recently, deterioration of lipid metabolism after adrenalectomy (ADX) for aldosterone-producing adenoma (APA) has been described.

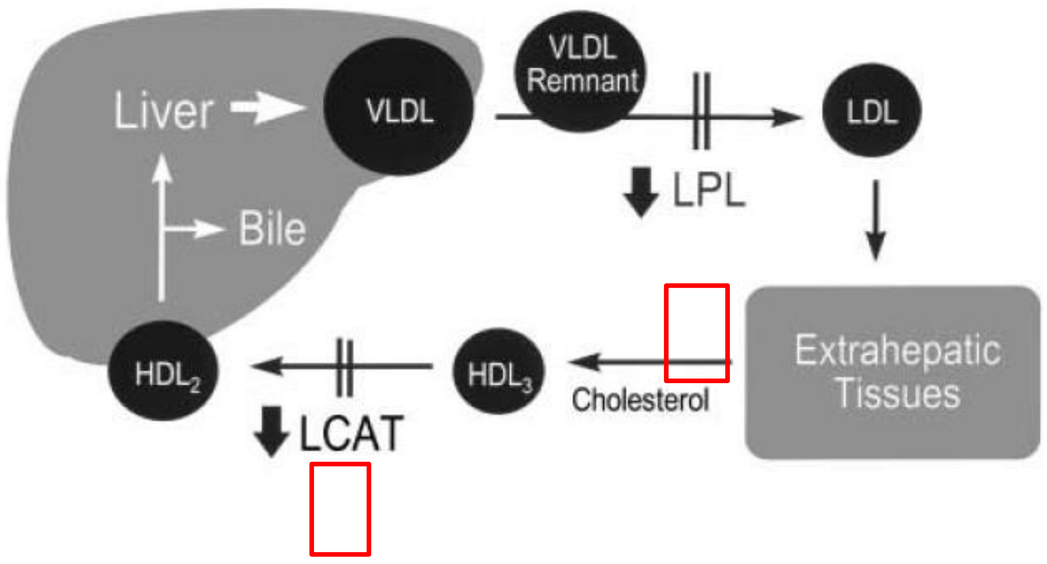
Objective:

We analysed longitudinal changes in lipid profiles in a large prospective cohort of PA patients. Data of 215 consecutive PA patients with APA (n=144) or bilateral idiopathic adrenal hyperplasia (IHA, n=71) were extracted from the database of the German Conn's Registry. Patients were investigated before and one year after successful treatment by ADX or by mineralocorticoid receptor antagonists (MRA).

Methods:

Glomerular filtration rate (GFR), fasting plasma glucose and components of lipid metabolism including triglycerides (TG), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol (HDL-C) were determined at 8.00 after a 12-hour fasting period.

Figure 1: Role of CKD in Cholesterol Metabolism



Abbreviations: LCAT, lecithin-cholesterol acyltransferase; LPL, lipoprotein lipase; CKD, chronic kidney disease

Results:

One year after initiation of treatment mean serum potassium levels and blood pressure normalized in the patients. HDL-C and TG developed inversely with decreasing HDL-C levels in patients with APA (p=.046) and IHA (p=.004) and increasing TG levels (APA p=.000; IHA p=.020). BMI remained unchanged and fasting plasma glucose improved in patients with APA (p=.004). Furthermore, there was a significant decrease of GFR in both subgroups at follow-up (p=.000). Changes in HDL-C and TG correlated with decrease in GFR in multivariate analysis (p=.024).

Conclusion:

Treatment of PA is associated with a deterioration of lipid parameters despite stable BMI and improved fasting plasma glucose and blood pressure. This paradoxical effect can be explained by renal dysfunction following ADX or MRA-therapy.

Figure 2: Lipid- and GFR changes following treatment

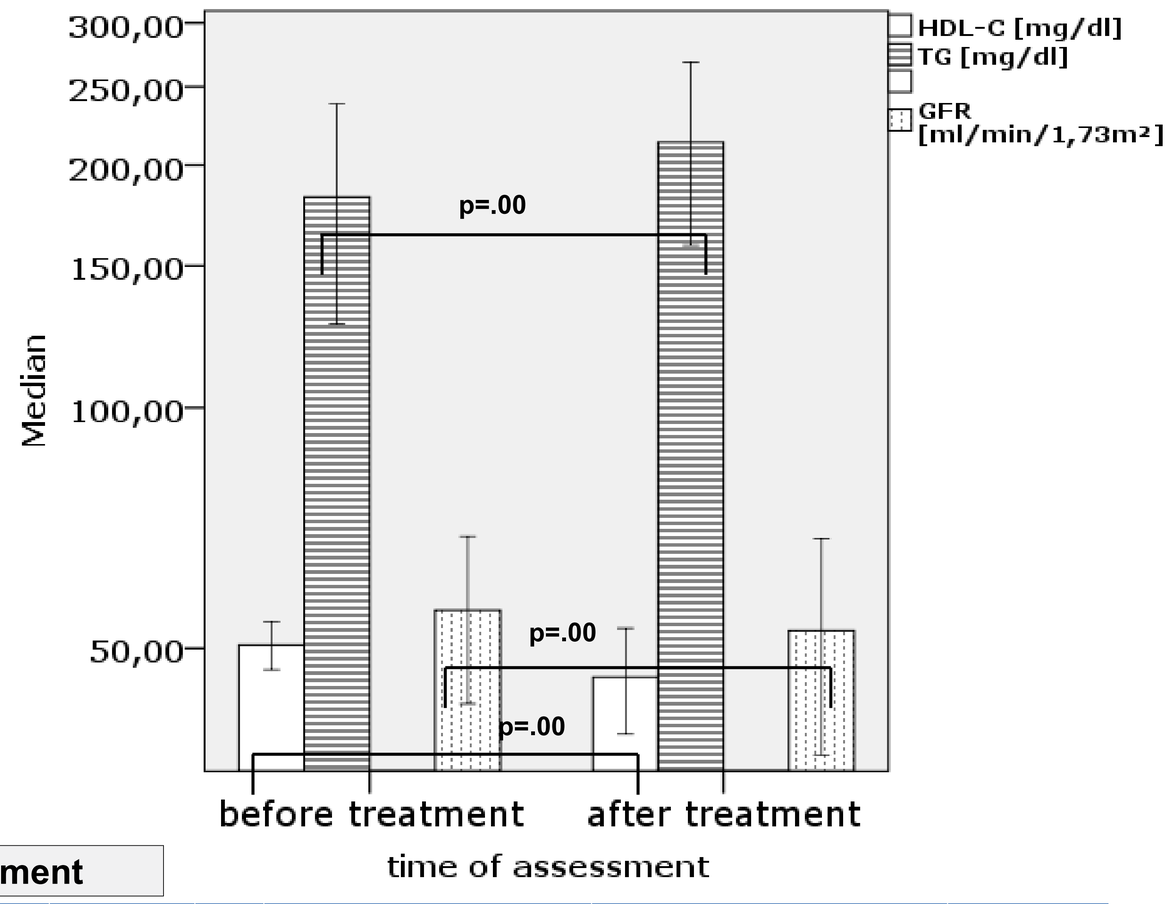


Figure 3: Metabolic variables of PA patients before and one year after treatment

Subtype	APA	APA	p		IHA	IHA	p
n	144	144	--		71	71	--
Time of Assessment	Before ADX	One year after ADX	--		Before MRA	One year after MRA	--
Serum Potassium	3.7 [3.2; 4.1]	4.2 [4.0; 4.5]	0.00*		3.7 [3.3; 3.9]	4.1 [3.0; 4.4]	0.00*
BMI [kg/m²]	27.9 [24.7; 32.2]	28.0 [24.6; 32.0]	0.11		28.7 [25.8; 31.0]	29.0 [25.5; 32.4]	0.23
Fasting Plasma Glucose [mg/dl]	99 [90; 109]	95 [88; 104]	0.00*		100 [90; 120]	102 [94; 111]	0.81
HDL-Cholesterol [mg/dl]	53 [45; 76]	52 [44; 65]	0.04*		52 [42; 66]	48 [39; 62]	0.00*
LDL-Cholesterol [mg/dl]	122 [95; 144]	121 [96; 141]	0.39		120 [99; 143]	116 [101; 134]	0.68
Total Cholesterol [mg/dl]	200 [175; 224]	200 [175; 224]	0.24		193 [171; 216]	192 [171; 212]	0.91
Triglycerides [mg/dl]	104 [69; 148]	111 [78; 167]	0.00*		111 [82; 150]	129 [85; 195]	0.02*

Data are given as median and 25th and 75th percentile. Asterisk indicates significance.

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