

Patients with abdominal aortic aneurysm demonstrate higher levels of non-cholesterol sterol markers of endogenous cholesterol synthesis

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Aims

To establish the levels of selected non-cholesterol sterols in patients with abdominal aortic aneurysm (AAA) and to compare them with levels in non-AAA patients treated for lipid metabolism disorder. To compare the levels of high-sensitivity C-reactive protein (hs-CRP) and Lp-PLA 2 – inflammation markers in the same group of patients.

Study design

A total of 58 AAA patients indicated for elective surgical procedure and 20 nonAAA patients in the control group treated for lipid metabolism disorder were examined. Methodology. Lathosterol (Lat), desmosterol (Des), lanosterol (Lan), campesterol (Cam) and sitosterol (Sit) were analysed with the use of GC/MS in patients with AAA and outpatients suffering from lipid metabolism disorder. hs-CRP and lipoprotein-associated phospholipase A2 were analysed in both groups.

Results

hs-CRP levels were significantly increased in patients with AAA compared to the control group (med. 3.6 mg/L, IQR 1.83 to 6.0 mg/L vs. 2.05 mg/L, IQR 0.99 to 3.0 mg/L, $P = .007$). Levels of non-cholesterol precursors of cholesterol synthesis – Lan, Des and Lat – were statistically significantly higher in the group of AAA patients compared to non-AAA patients (Lan: med. 0.28 $\mu\text{mol/L}$, IQR 0.24 to 0.32 $\mu\text{mol/L}$ vs. 0.23 $\mu\text{mol/L}$, IQR 0.20 to 0.25 $\mu\text{mol/L}$, $P = .004$; Des: med. 3.69 $\mu\text{mol/L}$, IQR 3.12 to 4.66 $\mu\text{mol/L}$ vs. 3.03 $\mu\text{mol/L}$, IQR 2.68 to 3.33 $\mu\text{mol/L}$, $P = .0005$; Lat: 5.95 $\mu\text{mol/L}$, IQR 5.18 to 6.9 $\mu\text{mol/L}$ vs. 4.72 $\mu\text{mol/L}$, IQR 4.32 to 5.22 $\mu\text{mol/L}$, $P = .0002$) while there were no statistically significant differences in the absorption parameters of Sit or Cam in either group.

Fig. 1. Levels of hs CRP, lathosterol, desmosterol, lanosterol, campesterol and sitosterol

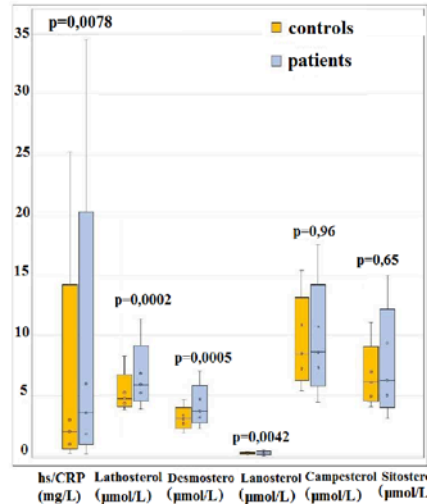


Table 1. Demographic and clinical characteristics of patients

	n	m	f	Age (Mean)	CHOL (mmol/L)		TGL (mmol/L)		DM	HT	IHD	Smoking
					Mean	95% CI	Mean	95% CI				
Patients	58	47	11	71	5.38	5.21-5.49	1.78	1.65-1.95	9	49	26	52
Controls	20	10	10	62	5.25	5.01-5.41	1.81	1.69-2.01	5	9	1	6

Conclusion

Statistically significant differences were found in the levels of non-cholesterol precursors of cholesterol synthesis – lanosterol, desmosterol and lathosterol – in AAA patients while no statistically significant differences were established for absorption parameters – sitosterol and campesterol – in either group. This indicates an imbalance in cholesterol synthesis in AAA patients which is not sufficiently corrected by statin treatment. AAA patients had higher hs-CRP levels compared with non-AAA patients with lipid metabolism disorder.