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## CARDIOVASCULAR FLASHLIGHT

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### A novel type of human spontaneous coronary atherosclerosis with triglyceride deposition

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Unlike cholesterol, roles of triglyceride (TG) in the atherogenesis are largely unknown. We previously reported a 41-year-old male with a genetic deficiency of adipose triglyceride lipase (ATGL) exhibiting profound TG accumulation in coronary arteries. Here, we pathologically compare his unusual TG-deposit coronary atherosclerosis with usual cholesterol-deposit atherosclerosis in a patient with ischaemic cardiomyopathy.

Both patients received cardiac transplantation (CTx). Transverse sections of coronary arteries from explanted hearts at CTx were double-stained with Sudan black B and immunohistochemistry for smooth muscle cells (SMCs) or macrophages (Mφ).

As shown in the left panels (Panels A and C), the cholesterol-deposit atherosclerosis had the following characteristics: (i) focal and eccentric-type stenosis with large lipid pool (Panels A and C), (ii) infiltration of foamy Mφ (Panel C) with expression of scavenger receptors, (iii) paucity of SMCs (Panel A) in the fibrous cap and shoulders of lesion, (iv) disrupted internal elastic lamina and thin medial layer resulting in remodelling. In contrast, TG-deposit atherosclerosis showed unique features as follows. His coronary arteries showed diffuse concentric-type stenosis (Panel B and Supplementary material online, Figure SA). Majorities of foam cells were SMCs in thick intima and media (Panels B and D). Those foamy SMCs with TG deposition expressed synthetic markers such as SM22α, but not scavenger receptors (Supplementary material online, Figures B and C).

Adipose triglyceride lipase deficiency is an ultra-rare, but extreme and representative case with a novel type of atherosclerosis with TG deposition. The present features were distinct from those of cholesterol-deposit atherosclerosis and Mönckeberg's sclerosis. It would be of significance to know how TG-deposit SMCs contribute to its initiation and development.

Supplementary material is available at *European Heart Journal* online.

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