

Is Elevated LDL from a Ketogenic diet a Health Concern?

That very much depends on the context (which should include HDL and Triglycerides):

The concern with elevated LDL ("bad" cholesterol) is that it may lead to the formation of arterial plaque and then narrowing and hardening of the arteries (Atherosclerosis) which in turn could lead to Cardiovascular diseases (eg: angina, blood clots, stroke and heart attacks).

LDL particles come in various densities and sizes. Particles of small dense LDL (sdLDL) are small enough to penetrate the arterial wall BUT research shows that people on a Ketogenic diet tend to have less sdLDL (Pattern A) than those eating a diet rich in carbohydrate (Pattern B) and that starting a Ketogenic diet will reduce a person's percentage of sdLDL.

If the sdLDL in the arterial walls is oxidised or glycated, Atherosclerosis is encouraged by the macrophages it attracts. (Small dense LDL particles are deficient in vitamin E and are highly susceptible to oxidation.) Consuming seed/vegetable oils, which are high in polyunsaturated fatty acids (Omega 6), can cause LDL oxidation, but I'm careful not to consume any seed/vegetable oils. Also, glycation is highly unlikely since a Ketogenic diet is extremely low in carbohydrate (I'm eating <20g daily excl. fibre) so very little glucose is present in the blood.

Also, why is LDL high? If someone is eating a Ketogenic diet, they are burning fat for fuel instead of glucose. Their blood supplies the energy to body cells in the form of triglycerides by packaging them up in a vLDL in the liver. When the triglyceride payload is delivered, an LDL particle results. In this case, the LDL can be considered benign as it is relatively quickly recycled by the liver to transfer more energy, so it isn't left lingering in the blood to possibly become small and dense.

Of course, there are other possible reasons for elevated LDL, eg: an infection, an injury or cancer as the body works hard to repair itself, but LDL levels fall again when the problem has resolved. In these cases, elevated LDL is a sign of a problem, and isn't the problem itself. Familial Hypercholesterolemia (FH), though, causes elevated LDL and results in high levels of small dense LDL, too. (I gather that Statins can be prescribed to reduce the amount of sdLDL in people with FH). Diabetes causes higher levels of sdLDL because the LDL particles linger twice as long in the blood, and Cardiovascular diseases are certainly associated with Diabetes.

I gather that cardiologists consider the ratio Triglycerides/HDL as a better indicator of Cardiovascular disease risk than serum LDL Cholesterol.

(I gleaned most of this information from a talk by Asst Prof. Ken Sikaris called 'Making Sense of LDL', which is viewable on YouTube, but it also agrees with what I have learned from other sources, eg: episodes of The Low Carb Cardiologist Podcast hosted by Dr Bret Scher.)