The KETO Trial: Does High LDL from a Ketogenic Diet Lead to Plaque Buildup? Transcript

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Study setup and keto group criteria

Here we have the results from the keto trial, which the internet is definitely not going to exaggerate or misrepresent. The aim of the study was to assess the level of plaque buildup in the coronary arteries of people following a ketogenic style diet with an LDL cholesterol level above 190 mg per deciliter, quite high, an HDL above 60 mg and triglycerides under 80 mg.

And this triad has been noted to occur in a subset of people who follow a ketogenic diet. The keto group included 80 volunteers who met those criteria and who claimed to have been following a Ketogenic Diet for an average of just under five years with LDL cholesterol levels of a whopping 272 milligrams per deciliter.

But it is important to note that all of these details were self-reported. They also reported having normal blood pressure and not having familial hypercholesterolemia or being on cholesterol lowering medications.

Control group matching concerns

There were then compared to participants in the Miami Heart cohort who were not following a ketogenic diet with those sky-high LDL levels and in fact had LDl cholesterol levels of 123 mg per deciliter on average.

However, this is where we run into some significant issues. They matched participants based on age, gender, race, smoking status, and whether they had diabetes, high blood pressure, or hyperlipidemia.

But they didn't provide information on how this matching was done. And matching people based things like whether or not they were diagnosed with diabetes can be misleading.

For example, one person could have pre-diabetes while the other one has normal blood glucose levels and they would both be considered as not having diabetes.

and the same can go for blood pressure and other variables. One glaring issue with the controls in the Miami cohort is that on average, their BMI would place them in overweight category, which was over three points higher than the Bmi in Keto group.

They also had slightly higher levels of CRP, a marker of inflammation, and these values weren't matched.

Plaque results and major caveats

So with all the caveats in mind, here are the results. Despite differences in LDL cholesterol levels, those in keto group did not have significantly greater coronary plaque burden compared to those of Miami.

But there are more caveats. The timeframe of five years may not be enough to see significant differences in plaque burden, and about a third of the people in the Miami cohort were on cholesterol-lowering medications.

So for most of their lives without medication, their LDL cholesterol levels would have been higher. So if you consider their lifelong LDL cholesterol levels, it could be closer to, if not even greater than those in the keto group.

Since people in keto were only on the ketogenic diet for about 5 years, meaning that they probably had much lower LDl cholesterol for most of their lives.

And finally, one of the researchers who was involved with this project early on claims that some participants were

excluded from participating if they had positive coronary artery calcium scores before the study.

And if true, this could seriously bias the results. But there was no mention of this in the study, so it would be interesting if the authors would release the screening data so we could see for ourselves.

Possible selection bias and conclusion

To conclude, even if we were to throw out all the potential issues and say the methodology was sound and adequate to pick up on differences in plaque burden after five years, the studies doesn't even necessarily support the idea that LDL cholesterol doesn' t matter.

A group of self-selected, highly motivated, and health-conscious individuals following a keto diet were compared to people with lower LDL cholesterol levels but higher BMI and inflammation who were possibly eating a typical American diet and had roughly the same plaque burden.

If LDl cholesterol really doesn't matter and a ketogenic diet is healthy but things like an elevated Bmi and Inflammation do matter, shouldn't we have seen more plaque in the Miami group?

That's what I would have suspected