

Transcript Details

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Exploring the Effect of Triglycerides

Dr. Sorrentino:

Welcome to Heart Matters on ReachMD. I'm Dr. Matthew Sorrentino, and I recently had the chance to catch up with Dr. Elliot Brinton, who's the President at the Utah Lipid Center in Salt Lake City. Here's Dr. Brinton explaining whether triglycerides have a direct effect on our endothelial cells or if they have a more indirect effect by changing our LDL cholesterol into more LDL particles.

Dr. Brinton:

It remains an area of active investigation and active controversy. Triglyceride levels certainly are strong predictors and probably causal factors in shrinkage of LDL and smaller, denser LDL is actually more atherogenic, I call it "stealth LDL" because we measure LDL cholesterol, of course, if the cholesterol content of an LDL particle goes down, LDL cholesterol tends to go down, and yet that particle with less cholesterol actually seems to be more atherogenic and there are quite a few lines of basic science evidence suggesting that's a causal effect. Now that said, question if triglycerides directly cause atherosclerosis and the quick answer is a resounding "maybe." We think that triglycerides levels can be associated with atherogenesis, fairly directly by the fact that if you have high triglyceride levels, the naturally rapid-occurring lipolysis of triglycerides generates a lot of free fatty acids. And free fatty-acids are pro-inflammatory and seem to be pro-atherogenic. So, just by itself, hypertriglyceridemia seems to be atherogenic. Now, the question is, "Are there other factors?", and part of it, of course, is that these fatty acids can harm the endothelial cells, they can be pro-atherogenic inside the artery wall because there's generation of free fatty-acids inside the artery wall and then the question is, "Well, what about the cholesterol content of these triglyceride-rich lipoproteins?", and that seems to be strongly atherogenic, as well. There's also a relationship with oxidation; oxidation and inflammation are, kind of, evil twins that tend to feed each other, they're kind of egging each other on. So there are lots of different ways in which this is relevant. There's a bad actor called Apo-CIII. Apo-CIII, by itself, seems to be atherogenic, independent of anything else, but it is a strong correlative hyper- triglyceridemia. There's this whole business of the remnant cholesterol, which is part of this cholesterol carriage of the triglyceride-rich lipoproteins. There's another factor, which we don't know if it's a causal factor or marker, but triglycerides content of LDL, which is kind of a very interesting back-door approach, and then with LDL, of course, we're thinking cholesterol, but it turns out that LDL triglyceride levels, which we don't often measure, are very strong predictors of atherosclerosis and then the question is, "Is the triglyceride carried by LDL somehow atherogenic just as we think that the cholesterol created by those lipoproteins that are primarily triglyceride-containing, may be atherogenic", so, it's probably all of the above and I think we just have to stay tuned for further research because this is an area where we're learning new things all the time.

Dr. Sorrentino:

That was Dr. Elliot Brinton from the Utah Lipid Center in Salt Lake City talking about triglyceride levels. For ReachMD, I'm Dr. Matthew Sorrentino. To hear my full conversation with Dr. Brinton or to find other episodes in this series, visit ReachMD.com/HeartMatters, where you can Be Part of the Knowledge. Thanks for listening!