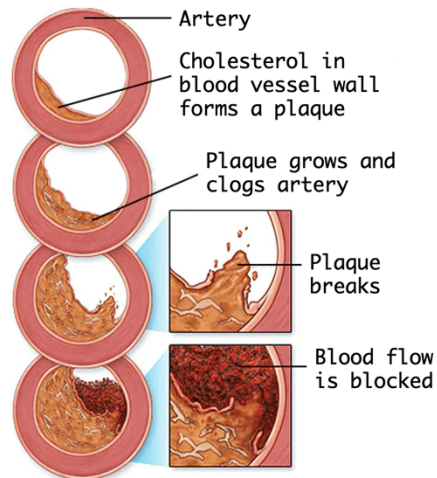


The Missing Link: Cholesterol, Cortisol, and clogged arteries

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HEALTH AND MEDICINE



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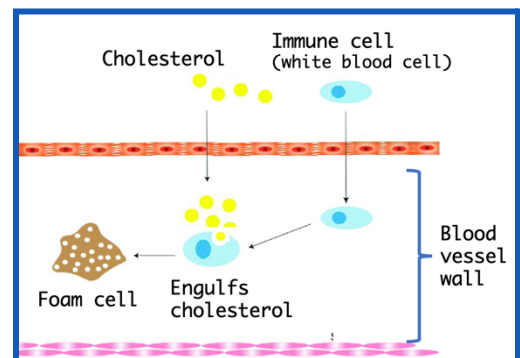
Scientists have long known that high levels of stress can result in plaques—a build-up of cholesterol in the walls of blood vessels. While small amounts cholesterol are normally found in blood vessels, too much of it can cause serious problems.

This is because the cholesterol plaque can grow to such a size that it blocks most of the artery and reduces blood flow. In very severe cases the plaque can break open, spilling its contents into the blood and blocking the artery entirely. When this happens, it can lead to a heart attack.

The plaque forms when cholesterol enters the blood vessel wall. Immune cells in the blood then also get into the blood vessel wall and engulf the cholesterol. They “eat it up” so to speak. The plaque grows because more immune cells get into the blood vessel wall and make the situation worse! But why is this happening? Why would the immune system make things worse in our own bodies?

This mystery was solved by a team of scientists from Australia. They discovered the role of foam cells in plaque formation. Foam cells are immune cells that engulfed cholesterol and became larger.

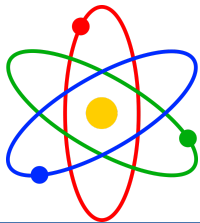
Foam cells release substances that signaled to other immune cells to get into the blood vessel wall. The foam cells called in more immune cells to help clear up the cholesterol. The problem is that the large foam cells cannot get out of the vessel wall. They become trapped, making the plaque bigger and bigger.



What does cortisol have to do with all this? It turns out that normally, when we are not stressed, cortisol stops this process. The cortisol hormone signal prevents more immune cells from getting into the blood vessel wall. In this way cortisol acts to stop the progression of the plaque from small to large.

However, when someone is stressed for a long time cortisol levels are always high. After a while the body begins to ignore the cortisol. This is similar to when we initially feel the tag on our shirt collar, but after a while of wearing it we stop feeling it. Our body ignores the feeling of the tag touching our skin. This adaptive strategy is good for cloth tags, but not for cortisol. When the body ignores the cortisol signal it causes more and more immune cells to get into the blood vessel wall and make the plaque bigger.

What can we do about it? Scientists and doctors recommend eating a balanced diet to keep cholesterol levels normal. Exercising also helps because it can reduce high cortisol levels. Basically, any activity that reduces stress can reduce cortisol levels. When cortisol levels are in the normal ranges the body starts paying attention to the cortisol signal again.



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