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Staging Coronary Risk: A New TRANSFORMative Approach

Announcer:

Welcome to CME on ReachMD. This episode is part of our MinuteCE curriculum.

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Dr. Budoff:

This is CME on ReachMD, and I'm Dr. Matt Budoff. I'm here today to talk about our risk staging for coronary disease using cardiovascular CT [computed tomography]. Today we'll delve into some of these complexities. Let's get to it.

The first thing I want to introduce is that we're going to be using cardiac CT angiography. So we're going to use a contrast-enhanced study of the coronaries that can look at both plaque volume, stenosis severity, presence of ischemia, and even high-risk plaque features. So with a simple scan, we get a lot of information about cardiovascular risk, and we're going to use this information to stage patients, to put them into categories of low risk, intermediate risk, and high risk, and very high risk, and then apply more therapies based on which category they end up in. So those patients at very high risk are going to get a lot of different therapies, and those patients at low risk are going to be relegated largely to lifestyle.

Currently, if we try to interpret the images comprehensively, it would take hours for an individual doctor to read all of the plaque features and the plaque volumes and the high-risk plaque characteristics that we see on these studies. So we're going to use AI to make these comprehensive measures. And using these comprehensive measures, we're going to categorize patients into stages.

The TRANSFORM trial is going to use artificial intelligence [AI] to interpret cardiac CT scans. So by doing that, it's going to automatically quantify plaque and total plaque volume, along with a number of other plaque metrics, including high-risk plaque features. And this has the potential to transform coronary risk assessment and guide personal treatment plans. Because if patients have no plaque at all and no high-risk features, then they're going to be relegated to less therapy, diet, lifestyle type of therapies. If patients have a small amount of plaque volume and no high-risk features, they're going to get lipid-lowering therapy. And then, as the plaque volume goes up, and as the plaque high-risk features go up, patients are going to get incrementally added more and more therapies. For example, if their LDL is not at goal and they have high-risk plaque features, they might get drugs such as inclisiran or bempedoic acid on top of a statin. For example, if patients have high-risk plaque, they may get therapies such as an SGLT2 or SGLT1/2 inhibitor to help with management of their risk.

So by categorizing individuals based on their risk of developing coronary disease, we're going to have a crucial new step in primary prevention. We're going to understand if we can take patients' risk, based on the cardiac CT and these advanced images, and stratify them to new and increasing algorithms of care. So the staging therapy will be based on their risk as based on their AI interpretation.

This should change the entire algorithms for emerging therapies, because by being able to assess individual risk, we can now match intensity of therapy with intensity of risk. And I think that's going to really go beyond just putting them on a statin, maybe putting them on a low-dose aspirin, maybe trying to get their blood pressure under better control. We're going to have a host of new therapies that are going to be available to these patients based on their risk. And some may qualify for drugs like sotagliflozin; some may qualify for drugs

like GLP-1 receptor agonists. Depending on what their algorithm is, whether they have diabetes or not, and other metrics, we're going to specify treatment.

The limitations simply are that we just don't know. We haven't done a careful analysis of cardiac CT in this way to risk stratify patients. We've done some work with coronary calcium, and we know the higher the calcium score, the higher the risk. And thus, we can address risk stratification that way. But we have not tried this with cardiac CT because there's too many variables. And AI now, for the first time, will afford us the opportunity to fully interpret cardiovascular CT, fully measure all of the different plaque metrics, including high-risk plaque features, and then assign patients based on a staging system; Stage 0, no coronary disease. Stage 1, mild plaque and no high-risk features; Stage 2, a moderate amount of plaque or high-risk features; and Stage 3, a severe amount of total plaque volume in the coronary tree or moderate plaque plus high-risk features. So by using the staging system, we're going to assign more and more therapies to patients, and the higher the stage, the more aggressive our therapies will be, including things, again, like SGLT1/2 inhibitors, rivaroxaban, and possibly even GLP-1 receptor agonists added on for those very high-risk individuals.

This approach is going to potentially change how we treat primary prevention, because if we could identify high-risk individuals based on their plaque morphologies and this AI algorithm, we're going to employ therapies that have been largely relegated to secondary prevention, things like rivaroxaban, things like sotagliflozin or bempedoic acid or inclisiran. And we're going to apply those therapies in these high-risk patients to reduce their cardiovascular risk, going well beyond the current algorithms of care that just include things like statins and maybe low-dose aspirin and maybe blood pressure control, and really opens the door for more comprehensive treatment when indicated based upon a high-risk status in this study, as assessed by AI and cardiac CT angiography.

So I think what we're going to learn is whether or not we can improve our current algorithms of care for both primary and secondary prevention patients by really increasing therapies when appropriate based upon these algorithms. And it's something that we don't yet have available or are commonly used in practice, but I think it is going to be the way of the future, and I think we are going to be able to use cardiac CT to better classify risk and to better appropriately put patients on more aggressive algorithms of care. And it's something that I think we'll learn a lot from in this study.

Well, this was brief, but hopefully useful for your practice. Thanks for listening.

Announcer:

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