IVUS: A better picture of coronary artery disease?

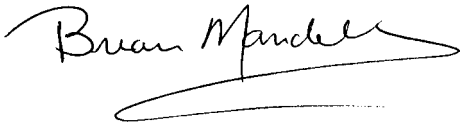
In therapeutic trials of coronary artery disease, investigators can use "hard" clinical end points such as how many people die or suffer acute coronary events with one treatment vs another. Such trials need to be large and long-term. Or they can use surrogate end points such as how much the treatments lower low-density lipoprotein cholesterol (LDL-C) levels. Such trials can be smaller and shorter-term, but they are based on the assumptions that a difference in LDL-C will translate into a difference in clinical outcomes, and that the drug intervention is acting only via its effect on the LDL-C level.

As an end point, intravascular ultrasonography (IVUS) is somewhere in the middle. Performed during coronary angiography, IVUS reveals the morphology of the vessel wall, where the disease is. Serial studies can show progression or regression of coronary plaques with treatment. IVUS certainly seems more physiologic than simply imaging the lumen. Thus, it should be a better surrogate marker than LDL-C, although it still is not the same as counting the number of myocardial infarctions and deaths.

On page 487 of this issue, Dr. Paul Schoenhagen and Dr. Steven Nissen discuss how IVUS is being used to evaluate new drug therapies for atherosclerosis in patients with known coronary artery disease. They also discuss computed tomography (CT) of the coronary arteries, which may in the future be used as a test for coronary disease.

How soon should we begin basing some of our treatment decisions on tests such as IVUS as opposed to surrogate markers such as LDL-C levels? Should findings on tests such as CT be interpreted as equivalent to vascular disease and be used as markers of the need for therapeutic intervention to prevent clinical events, or do we need to wait for the data showing that such early intervention has an impact on clinical outcome? How dependent are these tests on the skill of the interpreter?

Time will tell whether these fascinating technologies will translate from clinical research tools into clinical practice.



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