Massive Left Ventricular Aneurysm or Unruptured Pseudoaneurysm?

To the Editor:

The Image in Cardiovascular Medicine by Stehlik and colleagues is not completely accurate with regard to the diagnosis of left ventricular aneurysm and the related terminology. The authors said that left heart catheterization demonstrated and transesophageal echocardiogram confirmed the diagnosis of left ventricular aneurysm. However, these findings were not consistent with the diagnosis of true aneurysm. Left ventriculography showed the appearance of a narrow neck, which is suggestive of an unruptured pseudoaneurysm. Furthermore, echocardiography did not reveal a clear myocardial continuity, and the orifice to the cavity ratio was consistent with a false aneurysm. Gatewood and Nanda showed that the ratio of the maximum diameter of the orifice to the maximum internal diameter of the cavity was 0.25 to 0.50 for pseudoaneurysms, whereas the range was 0.90 to 1.0 ratios for true aneurysms. In the presented case, the ratio of the maximum diameter of the orifice to the maximum internal diameter of the cavity seems to be <1.0. Furthermore, the presence of thrombus within the pseudoaneurysmal cavity may result in an underestimation of the maximum cavity diameter. Echocardiographic data should be examined carefully to determine the level of confidence of identification of material comprising the wall of the cavity (ie, laminar thrombus versus myocardium). If neither continuity nor discontinuity of myocardium can be demonstrated, surrogate markers such as the ratio of orifice to maximum diameter, the flow characteristics of the chamber, and/or the relationship of coronary arteries to the chamber must be used to identify the entity. In addition, one of the most easily documented potential features proposed for distinguishing true aneurysms from pseudoaneurysms is location. An inferior or posterior location is suggestive of pseudoaneurysm rather than a true aneurysm. Moreover, for the development of a large true posterior aneurysm, extensive infarction in this region is necessary and generally involves the posterior papillary muscle, usually resulting in severe mitral regurgitation; this was not mentioned in the presented case. Finally, several reports describe the utility of MRI in identifying left ventricular pseudoaneurysm. Advantages of MRI include the capability of distinguishing among pericardium, thrombus, and myocardium and the potential to visualize disruption of the epicardial fat layer by the pseudoaneurysm.

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Response

We thank Dr Davutoglu for his thoughts. The differentiation of a true left ventricular aneurysm from a pseudoaneurysm with the use of traditional imaging techniques can be challenging. Our diagnosis was based on careful integration of available data. In our interpretation, the detailed echocardiographic examination revealed continuation of the myocardium well into the aneurysm cavity (full study not published). In addition, there was absence of turbulent flow between the left ventricle and the aneurysm cavity.

We did not find the ratio of the maximum diameter of the orifice to the maximum internal diameter of the cavity to be helpful in this patient. The quoted report by Gatewood and Nanda included only 2 patients with a posterior wall pseudoaneurysm and a single patient with a true aneurysm of the posterior wall. The ratio was 0.5 or less in the pseudoaneurysm group and 0.9 or more in the true aneurysm group. In our patient, the ratio was less than 0.9 but more than 0.5. Even though the presence of thrombus may obscure the full extent of the aneurysm, the measurements described by Gatewood and Nanda were not affected by this fact. Posterior pseudoaneurysms are more frequent than true aneurysms, but the location in an individual patient is not a sufficient criterion.

Davutoglu’s interpretation of the data published by Loop et al does not appear to be comprehensive. Sixty percent of patients with posterior aneurysms described in that study had no involvement of the posterior papillary muscle and had no mitral regurgitation. Loop et al actually concluded that survival of these patients depended to a great extent on the preservation of the mitral valve mechanism, as was the case in our patient.

We agree with Davutoglu that MRI provides excellent tissue characterization. Patients scheduled for left ventricular reconstruction at our institutions routinely undergo cardiovascular MRI. In addition to the anatomic datum, this method also provides information on regional myocardial function and viability, valvular function, and blood flow characteristics.

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Circulation. 2004;110:e317
doi: 10.1161/01.CIR.0000142206.27380.3D

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