Left Main Dissection - The Great Masquerader Intravascular Ultrasound (IVUS) Saves the Day...

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Left Main Dissection – The Great Masquerader
Intravascular Ultrasound (IVUS) Saves the Day....

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Background:

Angiography has been the standard method to evaluate the extent of vessel disease but provides an image of lumen contour, but does not yield information about the lumen characteristics and vessel-wall structure.

Intravascular ultrasound (IVUS) imaging is a new modality that provides visualization of the vessel lumen and wall structures in cross-section.

IVUS imaging provided valuable information on the degree of stenosis and the type and extent of atherosclerotic plaques.

Several in vitro studies have demonstrated excellent correlation between ultrasound images and findings of histological investigation.

Case Report:

57-year-old woman with non ischemic cardiomyopathy secondary to Adriamycin use for breast cancer presented for an elective cardia cathterisation to evaluate for concomitant coronary artery disease prior to mitral valve vs replacement in the presence of severe mitral regurgitation.

During the cathterization procedure, her right coronary artery did not show any obstructive coronary artery disease.

After significant difficulty in cannulating the left coronary artery ,on imaging there was concern for possible ostial dissection of left main (figure 1).

Intravascular ultrasound was performed on the possible ostial lesion which ruled out the possibility of left main dissection.

Diagnostic IVUS was performed on the lesion in the left m 3.0 launcher-guiding catheter and an Asahi Prowater 180 cm wire. Volcano digital eagle eye platinum .014 150 cm 5 Fr catheter was advanced over the wire to perform the examination.

Figure 1

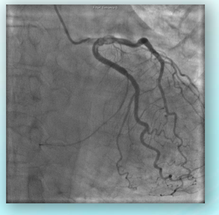


Figure 2

The residual lesion was discrete and no dissection was noted and hence no intervention was performed (figure 2).

An intra aortic balloon pump was also placed for hemodynamic support in the presence of severe mitral regurgitation and acute pulmonary edema.

Figure 3

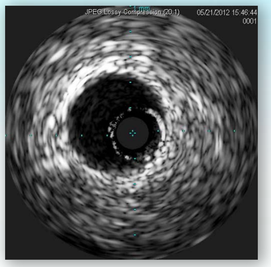
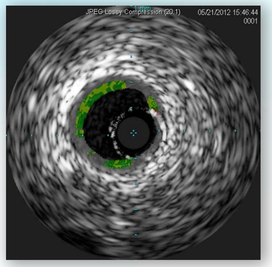


Figure 4



Discussion:

This case validates the wisdom offered by experienced interventionists that “there is no such thing as an easy angioplasty. It also emphasizes the importance of careful vigilance and scrutiny of an angiogram.

Guide-related injuries of the left main stem or proximal right coronary artery during percutaneous intervention are uncommon and usually caused by large-bore guide catheters with aggressive curves, lack of coaxial engagement, deep engagement in the coronary osmium to provide backup in presence of underlying atherosclerosis.

Coronary artery dissections occurring during percutaneous coronary intervention are most commonly caused by balloon barotrauma at the site of the lesion. This complication can result in serious problems including abrupt vessel closure, extension into major proximal branches or the aorta, and a need for additional and unplanned stents.

Several factors contribute to this complication, including the presence of ostial coronary disease, unusual vessel takeoffs, and the use of aggressive guide catheters such as large bore (8 French or larger) or Amplatz catheters. The common practice of deep insertion of the guide catheter into the coronary artery in an effort to increase backup and allow passage of stents or balloons also leads to dissection, especially if the guide catheter is not coaxial to the artery.

The subtle luminal narrowing and an intimal flap of a previously normal segment provided the most important clue to the presence of this complication. Such a finding is either due to spasm or a dissection with an intramural hematoma. Failure to resolve with nitroglycerin usually convinces the operator that something more than spasm is present.

Usually, dissections create a visible flap and retention of contrast. In this case, these features were absent and only luminal narrowing was seen on IVUS.

Intravascular ultrasound was indispensible in this case. Aprt from confirming the diagnosis, and ruling out hematoma, IVUS also defines the extent of the injury and guide the stent repair. Fortunately in this case what seemed to be left main dissection initially was actually far less serious on IVUS not requiring any intervention.

Management of a left main stem guide-related dissection depends on the extent of the dissection, its involvement with side branches or the aorta, and patient stability.

Small dissections that do not retain contrast or impair the lumen can be treated conservatively and will usually heal without sequelae.

Large dissections causing symptoms or luminal compromise need more definite treatment.

Stent repair is often successful, but can be challenging if the dissection extends beyond the bifurcation of the left main into the left anterior descending artery and circumflex vessels.

Conclusion:

Use of aggressive guide catheters to achieve suitable backup may lead to dissection of the proximal vessel.

Injury to the left main stem during coronary intervention of either the left circumflex or left anterior descending arteries may be lethal if not promptly recognized and treated.

Intravascular ultrasound is indispensible in this scenario.