The Accordion Phenomenon

in the Left Anterior Descending Coronary Artery

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A 73-year-old woman with a history of hypertension and dyslipidemia was admitted with acute coronary syndrome. A coronary angiogram revealed a severe stenosis in the proximal left anterior descending coronary artery (LAD) and a moderate stenosis in the mid-LAD (Fig. 1A). A 0.014-in, non-stiff, floppy Intuition® guidewire (Medtronic, Inc.; Minneapolis, Minn) was advanced across the lesion; however, it could not be advanced to the distal LAD because of marked tortuosity. Next, a hydrophilic-coated PT²™ Moderate Support Guide Wire (Boston Scientific Corporation; Natick, Mass) was advanced into the coronary artery. Contrast injection revealed multiple filling defects that had the appearance of a long, complex lesion (Fig. 1B). Because the administration of intracoronary glyceryl trinitrate had but little effect, the operator considered these "new" lesions to be pseudolesions and proceeded with the percutaneous coronary intervention in the proximal and mid-LAD. The proximal lesion was predilated with a 2-mm balloon. At this point, the operator retrieved the guidewire, and the disappearance of the new lesions (Fig. 1C) confirmed that "the accordion phenomenon" had been present. With greater confidence, the operator then treated the proximal and mid-lesions (respectively) with 2.75 × 18-mm and 2.5 × 15-mm drug-eluting stents.

Comment

The "accordion" or "concertina" effect is the appearance of pseudolesions after the advancement of stiff devices in a tortuous coronary artery, and it is caused simply by the invagination of the straightened arterial wall along its long axis.[1] This effect remains a challenge for interventionalists, because the differential diagnosis includes dissection, spasm, and thrombus; distinguishing pseudolesions from these other conditions prevents unnecessary intervention. Suspicion is the initial step in the diagnosis. These pseudolesions are unresponsive to nitrate administration. In our practice, the accordion phenomenon has been more common in elderly women, either because of the increased vascular tortuosity in this group or because of the loose (if not sclerotic) arterial wall. Partial removal of the stiff instrument helps in making the diagnosis. Nevertheless, this step should be taken with caution, because it carries the risk of
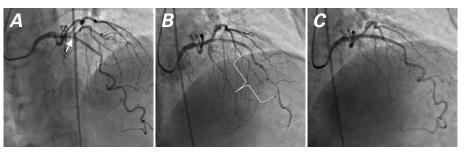
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Fig. 1 *Coronary angiograms. **A**) Arrow shows the severe stenosis at baseline. **B**) After percutaneous transluminal coronary angioplasty of the proximal lesion, pseudolesions (square bracket) can be seen in the mid-distal left anterior descending coronary artery. **C**) The pseudolesions disappeared after the guidewire was retrieved.*

Supplemental motion images are available for Figures 1A–C.

removing the guidewire from an actual dissection or lesion. To avoid this, withdrawal of the guidewire can be halted while the floppy part of the guidewire is still in the lesion. Another option is the use of over-the-wire balloons or microcatheters, which can conform to the curve of a tortuous artery.[2]

References

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2. Goel PK, Agarwal A, Kapoor A. "Concertina" effect during angioplasty of tortuous right and left coronary arteries and importance of using over-the-wire system: a case report. Indian Heart J 2001;53(1):87-90.