Mimetic total coronary sinus occlusion due to superselection with the balloon catheter

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Received 9 September 2009; accepted after revision 7 November 2009

A 77-year-old man with dilated cardiomyopathy, atrial fibrillation, QRS duration of 140 ms, and NYHA functional class III was referred for cardiac resynchronization therapy device implantation. Coronary sinus (CS) contrast venography by balloon catheter showed no
evidence of tributary veins, mimicking total occlusion of the CS. It was found to be due to superselection of a side branch with the balloon catheter.

Case report
A 77-year-old man was a case of dilated cardiomyopathy with QRS duration of 140 ms, and NYHA functional class III with left ventricular ejection fraction of 27%. He was indicated and referred for cardiac resynchronization therapy device implantation. The right ventricular lead was first implanted in the right ventricular apical position. After cannulation of the coronary sinus (CS) ostium with a guiding sheath (Attain Guide Catheters, Medtronic Corp., St Paul, MN, USA), CS contrast venography by balloon catheter showed no evidence of tributary veins, mimicking total occlusion of the CS (Figure 1A). Coronary sinus spasm was initially suspected, however, intracatheter nitroglycerine administration did not significantly reverse or alleviate this condition. The balloon catheter was then withdrawn proximally and CS venography was performed again. Fortunately, this CS venography showed the main trunk and its tributary veins. In comparison with the previous picture (Figure 1A), the previous CS occlusion-like picture was found to be due to superselection of a small branch by the balloon catheter (Figure 1B, arrows). The left ventricular lead was subsequently placed in the posterior lateral cardiac vein (Attain Bipolar OTW Model 4194, Medtronic Corp.) (Figure 1C). Post-procedural multi-slice computer tomography did not show a local dissection (Figure 1D). Although the configuration of the inflated balloon tip in the balloon catheter will rarely lead to superselection of the small branches, it was still possible to occur during CS venography.

Discussion
Contrast venography is necessary in order to diagnose a pre-existing CS vein occlusion or other venous anomalies that might prevent successful transvenous LV lead placement. Many conditions would result in the CS vein occlusion, such as spasm, dissecting, stenosis, and so on. This case report could enable operators to take the possibility of superselection of the balloon catheter into consideration when they are in situations with CS occlusion-like venograms.

Conflict of interest: none declared.

Funding
This study was supported in part by grants from Taichung Veterans General Hospital (TCVGH- 973106C, 983105C, 983104B) and Yen Tjing Lin Medical Foundation (CI 97-12), Taiwan, ROC.

References