Acute myocardial infarction without angiographic luminal narrowing: A case of iatrogenic whole coronary artery dissection

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A 61-year-old man was referred to the Seoul National University Hospital (Seoul, Korea) from another hospital due to chest pain and ST segment elevation during coronary angiography. The electrocardiogram performed on arrival showed ST segment elevations in inferior leads, suggesting an inferior acute myocardial infarction (Figure 1A). The patient was sent to the cardiac catheterization room for emergency angiography. There was no significant luminal narrowing of the left coronary artery. The right coronary angiogram showed normal coronary flow without obvious angiographic obstruction, despite continued typical symptoms and electrocardiogram changes of acute inferior wall myocardial infarction (Figure 1B). A subsequent intravascular ultrasound (IVUS) revealed dissection of the entire right coronary artery (RCA) from the ostium to the far distal portion (Figure 2A). Angiography performed after pulling back the catheter just out of the RCA ostium showed perivascular staining just distal to the ostium, suggesting iatrogenic dissection of the entire RCA (Figure 2B). After stenting at the RCA ostium, perivascular contrast dye staining disappeared, the patient's symptoms were relieved and the ST segment elevation was resolved (Figure 2C). At the six-month follow-up, right coronary angiography showed a patent stent, and IVUS revealed complete resolution of the coronary artery dissection (Figure 2D).

Catheter-induced coronary artery dissection is an infrequent complication of diagnostic coronary angiography or percutaneous coronary intervention, and has varied outcomes such as acute closure of the vessel with myocardial infarction, retrograde extension of the dissection back to the aorta and normal flow into the distal arterial bed without damage to the myocardium (1-3). The present case shows that a sudden diffuse luminal narrowing due to iatrogenic whole coronary artery dissection can cause ST segment elevation and myocardial injury despite angiographically normal coronary artery flow. The initial injury was believed to be secondary to the trauma that occurred during engagement of the catheter. Further dissection was made by forceful contrast injection. An exemplary case of a disastrous complication that can occur during diagnostic

Figure 1 A Electrocardiogram showing ST segment elevations in inferior leads, suggesting an inferior acute myocardial infarction. B Right coronary angiogram showing normal coronary flow without obvious angiographic obstruction

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Figure 2) A Intravascular ultrasound (IVUS) revealing dissection of the entire right coronary artery (RCA) from the ostium to the far distal portion (arrowheads). **B** Angiography performed after pulling back the catheter just out of the RCA ostium, showing perivascular staining just distal to the RCA ostium, suggesting iatrogenic dissection of the entire RCA (arrowheads). **C** After stenting at the RCA ostium, perivascular contrast dye staining disappeared and the patient's symptoms were relieved along with resolution of ST segment elevation. **D** At the six-month follow-up, right coronary angiography showed a patent stent, and IVUS revealed complete resolution of the coronary artery dissection.

coronary angiography was presented, reminding us of how careful we should be during invasive procedures. In addition, the present case demonstrates the limitations of coronary angiography and the value of IVUS examination in the evaluation of coronary lesions.

REFERENCES

1. Awadalla H, Sabet S, El Sebaie A, Rosales O, Smalling R. Catheter-induced left main dissection incidence, predisposition and

- therapeutic strategies: Experience from two sides of the hemisphere. *J Invasive Cardiol* 2005;17:233-6.
2. Yeih DF, Tseng CD, Hsu KL, Huang CH, Chiang FT, Tseng YZ. Unusual coronary artery dissection during percutaneous transluminal coronary angioplasty: Report of a case. *Int J Cardiol* 1999;68:121-4.
3. Nikolsky E, Boulos M, Amikam S. Spontaneous healing of a long, catheter-induced right coronary artery dissection. *Int J Cardiovasc Intervent* 2003;5:211.