

# Drug-resistant vasospastic angina pectoris with plaque erosion in the focal spastic lesion confirmed with coronary angiography

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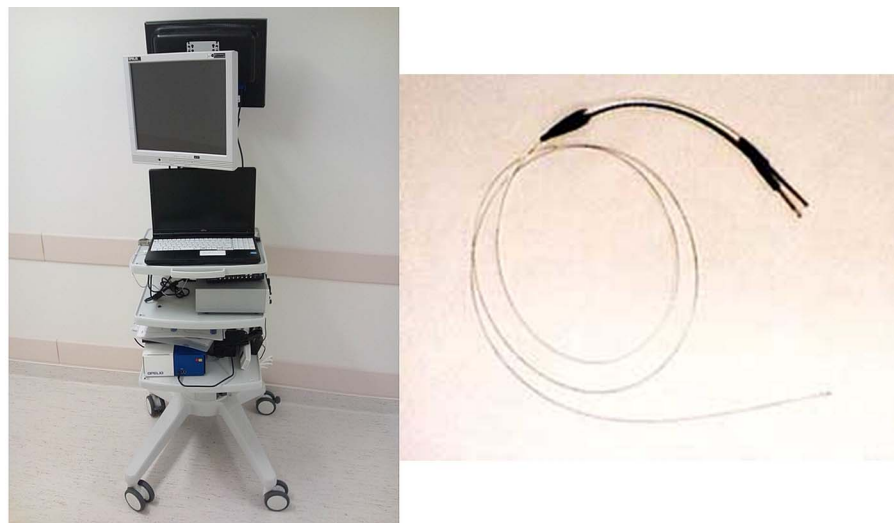
## DESCRIPTION

Plaque erosion within the coronary artery accounts for up to 20% of all sudden deaths and up to 40% of sudden deaths as a result of coronary thrombi in patients with coronary artery atherosclerosis.<sup>1 2</sup> We present a case of drug-resistant vasospastic angina pectoris (VSA) with erosion in the focal spastic lesion confirmed with coronary angiography (figure 1). A 78-year-old man presented to the coronary care unit with sudden chest pain accompanied by ECG ST segment elevation on V1–V3 and elevation of serum troponin-T level. A coronary angiography (CAG) revealed 90% stenosis in segment 2 of the right coronary artery, and this was removed by an intra-arterial injection of nitroglycerin. The left coronary artery was normal. Based on the above findings, acute coronary syndrome (ACS) associated with VSA was diagnosed. One month later, the patient was readmitted for ACS. CAG showed no stenosis, and an acetylcholine provocation test was performed in conjunction with adequate medication therapy (videos 1 and 2). As a result, focal vasospasm was induced, with the patient experiencing chest pain and an ECG change at segment 2 (figure 2). Coronary angiography showed yellow plaque with erosion at segment 2, similar to that of ACS (video 3 and figure 3). Percutaneous coronary intervention (PCI) was

performed in this segment using a bare metal stent in conjunction with drug therapy. The PCI was successful, and the patient no longer experienced chest pain or ACS recurrence.

This is the first case in which intimal injury of a focal spastic lesion has been confirmed by coronary angiography in a case of ACS. Pathological intimal injury has been previously observed in VSA,<sup>1</sup> and a causal relationship has been reported between intimal injuries (such as haemorrhage, flap, thrombus ulcer) and VSA. These factors have not been previously reported in the context of ACS. PCI is a controversial method of treatment for VSA. While some case reports have shown the therapeutic validity of stent placement for drug-resistant focal VSA,<sup>3</sup> other reports have described provocation of vasospasm at the stent edge following this procedure. The influence of the stent in these cases—particularly the drug-eluting stent—was unclear. In this case, while the coronary artery stenosis was treated, we chose to supplement this treatment with PCI with a bare metal stent. As a result of this treatment, the VSA did not recur and was not provoked by follow-up acetylcholine stress testing after PCI.

In conclusion, the case presented here elucidates the mechanism underlying intractable focal drug-resistant VSA and provides evidence of a possible therapy for this condition.

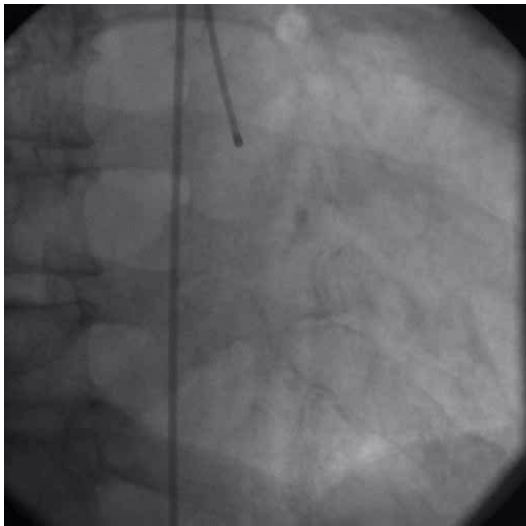


**Figure 1** Image of the coronary angiography device.



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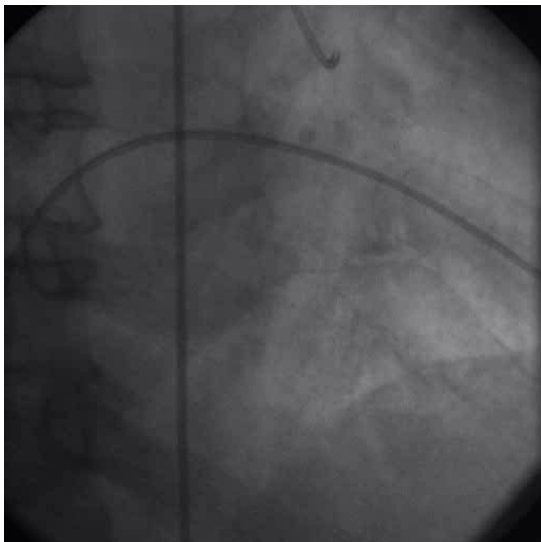
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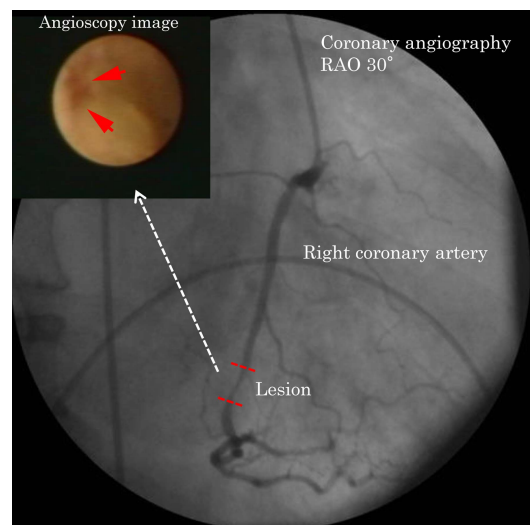
**Video 1** Visuals of coronary angiography before acetylcholine provocation.



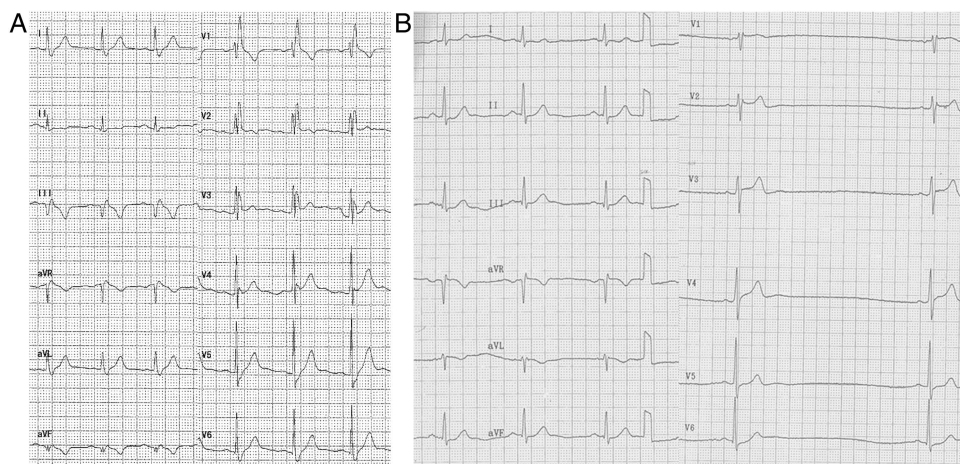
**Video 3** Visuals of coronary angiography.



**Video 2** Visuals of coronary angiography after acetylcholine provocation.



**Figure 3** Images from coronary angiography and angioscopy. Angiography showed coronary spasm in segment 2. An erosion was observed in the lesion by angioscopy (bold red arrows).



**Figure 2** Images from the ECG. (A) Before acetylcholine provocation. (B) After acetylcholine provocation.

## Learning points

- ▶ This is the first case in which intimal injury of a focal spastic lesion has been confirmed by coronary angiography in a case of acute coronary syndrome.
- ▶ This case indicates that coronary spasm may be associated with acute coronary syndrome.

**Contributors** SN was involved in the study concept and design, analysis and interpretation of data, collection and assembly of data, drafting of the article and critical revision of the article for important intellectual content. SN takes responsibility for the manuscript as a whole. MK was involved in the study concept and design, analysis and interpretation of data, drafting of the article and critical revision of the article for important intellectual content. HT was involved in the

drafting of the article and critical revision of the article for important intellectual content. WS was involved in the study concept and design, drafting of the article, critical revision of the article for important intellectual content and final approval of the article.

**Competing interests** None declared.

**Patient consent** Obtained.

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