

Unexpected Coronary Angiographic Findings in a Patient with Wellens' Sign

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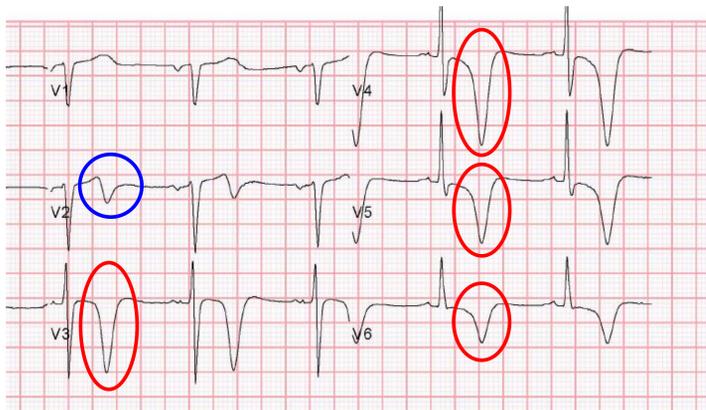
Introduction

- Wellens' sign: abnormal electrocardiogram (EKG) findings of deeply, symmetrically inverted or biphasic T waves in the precordial leads in the context of unstable angina
- Typically associated with significant stenosis in the proximal left anterior descending (LAD) coronary artery

Case Description

- An 81-year-old man with moderate to severe aortic stenosis, hypertension, mild left ventricular hypertrophy, hyperlipidemia, and tobacco use
- Presented to the emergency department with subacute, intermittent chest pressure at rest, decreased exercise tolerance, and occasional presyncope
- Asymptomatic on presentation, but had a blood pressure of 190/91
- Initial labs were notable for a negative troponin

EKG



- Biphasic T waves in V2 (blue circle)
- Deeply inverted T waves in V3 – V6 (red circles)

Initial Management

- Given concern for hypertensive emergency and unstable angina, transferred to the cardiac care unit (CCU), where blood pressure was lowered with intravenous nitroglycerin infusion and carvedilol, in addition to the patient's outpatient medication, lisinopril
- Started on other medications for acute coronary syndrome, including aspirin, intravenous heparin, and atorvastatin

Diagnostic Workup

Coronary angiography: severe right coronary artery and left circumflex artery stenosis, without significant left anterior descending artery stenosis

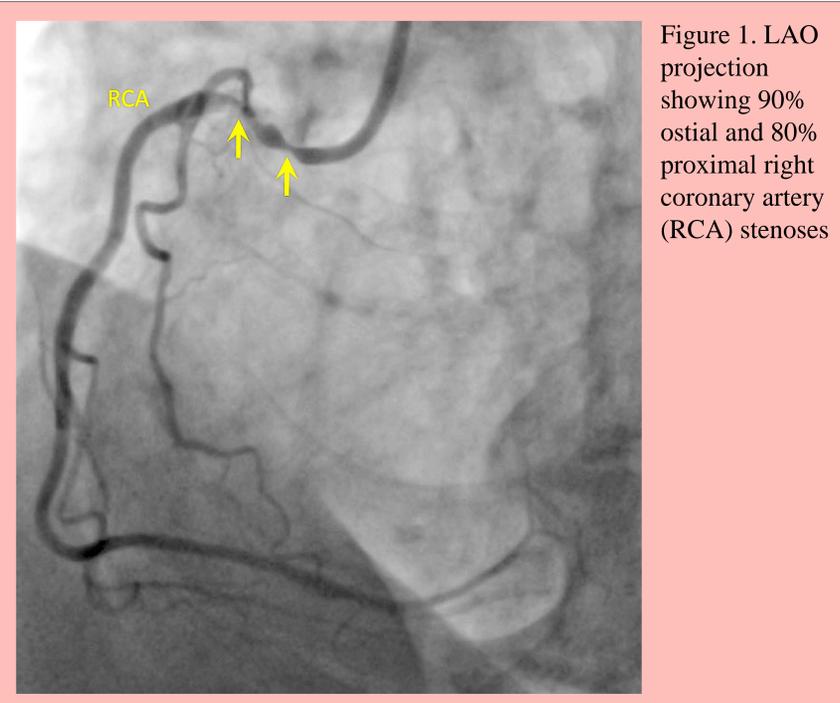


Figure 1. LAO projection showing 90% ostial and 80% proximal right coronary artery (RCA) stenoses

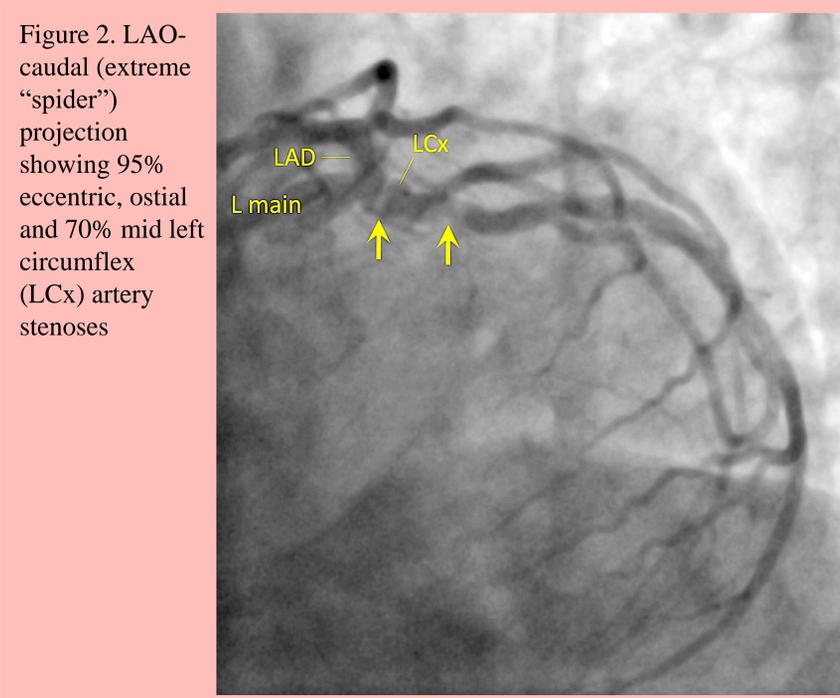


Figure 2. LAO-caudal (extreme "spider") projection showing 95% eccentric, ostial and 70% mid left circumflex (LCx) artery stenoses

Continued Management

After careful consideration of percutaneous and surgical coronary revascularization strategies, the patient was deemed a more suitable candidate for percutaneous coronary intervention (PCI) and underwent successful PCI, with deployment of drug-eluting stents to the LCx and RCA. The T-wave abnormalities on EKG persisted, but the patient's symptoms improved significantly.

Discussion

Recognizing Wellens' sign in the EKG of a patient with unstable angina carries significant prognostic importance because it is strongly associated with high-grade stenosis of the proximal LAD and if not worked up and treated promptly, could lead to a large anterior wall myocardial infarction^{1,2}.

The T-wave abnormalities often appear after the chest pain has subsided and are not associated with ST-segment elevation, signs of an old anterior wall infarct (i.e., poor R-wave progression or Q waves in the precordial leads), or serum troponin elevation.

The angiographic findings in this patient were unusual in that the significant coronary stenoses were found in the LCx and RCA and not in the LAD. The persistence of the EKG abnormalities after PCI may reflect delayed resolution of repolarization abnormalities and/or residual ischemia related to his aortic stenosis.

This case adds to the small number of published reports describing Wellens' sign in the absence of significant LAD stenosis³.

Teaching Points

- Clinician must be able to recognize Wellens' sign in patients with unstable angina because if left untreated, patients have a high risk of large anterior wall MI.
- Even when not suffering from a critical LAD stenosis, patients with Wellens' sign may have significant coronary artery stenoses elsewhere.

References

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3. Wang X, Sun J, Feng Z, Gao Y, Sun C, Li G. Two case reports of Wellens' syndrome. *J Int Med Res.* 2018;46(11):4845–4851. doi:10.1177/0300060518800857