Which is the culprit artery?

D. LUKE GLANCY, MD, ROBERT S. LEWIS, MD, RADHAKRISHNAN NAIR, MD, DOUGLAS MENDOZA, MD,
AND FAROUK BELAL, MD

A 59-year-old woman had been treated at another hospital for unstable angina for 5 days. One day after discharge, she returned with prolonged chest pain, and an electrocardiogram was recorded (Figure 1).

The most notable features of the electrocardiogram are ST and T changes in leads V₁ through V₄. Superficially, these changes suggest a left anterior descending lesion with anterior subendocardial ischemia and/or injury, but closer inspection indicates otherwise. Minimal ST-segment elevation and slight terminal T-wave inversion are seen in lead III, and the reciprocal of these changes is noted in aVL, where ST depression and a negative/positive biphasic T wave are apparent. Thus, there is evidence of transmural inferior injury (1). A second look at V₂ through V₄ sug-

gests ST depression and negative/positive biphasic T waves similar to those seen in aVL, implying that these changes are reciprocal to ST elevation and slight terminal T-wave inversion over the posterior wall of the left ventricle. Thus, the electrocardiogram indicates not anterior but posterior and inferior transmural injury.

Either right or left circumflex coronary artery occlusion can produce posterior and inferior injury. Because the ST and T changes are most marked in V₁ through V₄ and because these changes are typical of left circumflex occlusion, that seems the likely culprit (2, 3). The ST is depressed in aVL, suggesting that the lesion is distal to the first obtuse marginal branch. Angiograms made 4 days later at The Medical Center of Louisiana in New Orleans show complete occlusion of the left circumflex dis-

Figure 1. The electrocardiogram recorded on the patient's second admission.

From the Section of Cardiology, Department of Medicine, Louisiana State University Health Sciences Center and The Medical Center of Louisiana, New Orleans.

Corresponding author: D. Luke Glancy, MD, Section of Cardiology, Department of Medicine, Louisiana State University Medical Center, 1542 Tulane Avenue, New Orleans, Louisiana 70112-2822.

Figure 2. (a) Left anterior oblique arteriogram of the right coronary shows severe proximal narrowing (P). (b) Right anterior oblique arteriogram of the left coronary shows complete occlusion (O) of the left circumflex distal to 2 obtuse marginal branches. An inferior third marginal (3) is faintly opacified by collaterals. (c) Diastolic frame of right anterior oblique left ventriculogram. (d) Systolic frame of right anterior oblique left ventriculogram shows marked hypokinesis of the basal two thirds of the inferior wall.

tal to 2 obtuse marginal branches (Figure 2). The right coronary artery is narrowed proximally, but the left circumflex is the culprit.

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