CLINICAL VIGNETTE

Unstable Angina Presenting as Left Arm Pain

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Case Presentation

A 44-year-old man with a history of diet-controlled type 2 diabetes mellitus and hyperlipidemia presented with acutely worsening effort induced chronic left arm pain. The patient had reported several years of intermittent left arm pain. However, in the week or so prior to evaluation, his pain was evident with minimal exertion, and at times even without exertion. He denied any associated exertional shortness of breath or chest pain, denied orthopnea, paroxysmal nocturnal dyspnea, lower extremity edema, palpitations, dizziness or syncope. There was no history of trauma to the left shoulder or arm. He was not taking any medications due to personal preference. Patient was of South Asian ancestry and his family history was significant for a father with history of myocardial infarction in his early 60s. He was a nonsmoker and had no alcohol or illicit drug use.

On physical examination, his vital signs were all within normal range. There was minimal tenderness to palpation over the left lateral elbow, and he had normal grip & shoulder strength as well as intact range of motion. There was no chest wall tenderness to palpation. Initial evaluation included an X-ray of the left elbow, which did not reveal any fracture, dislocation, or arthritis. This was followed by a venous ultrasound duplex of the left upper extremities, which did not reveal any evidence of deep venous thrombosis. He had an X-ray of the cervical spine and MRI of the cervical spine without contrast, which were both unremarkable. An ultrasound of the left shoulder did not reveal evidence of a discrete rotator cuff pathology and was otherwise normal.

Over the weeks during which he underwent this workup, the patient was seen in urgent care several times, worked with physical therapy, and was trialed on multiple analgesics. These interventions had minimal effect, and the patient was subsequently referred to cardiology.

After being evaluated initially in the cardiology office, the patient was directed to the Emergency Department (ED) with concern for crescendo unstable angina. In the ED, his vital signs showed a blood pressure of 105/69 mmHg, heart rate 69 beats/min, and oxygen saturation of 100% on room air. His physical exam was unremarkable. Laboratory evaluation revealed WBC count 4.5, hemoglobin 15, platelets 177, serum creatinine 1.05, and blood glucose 144. Serial troponins were negative six hours apart. EKG showed normal sinus rhythm, normal axis, and no ST-T wave changes. Echocardiography showed a normal left ventricular size and systolic function of 62%.

Patient was hospitalized given the clinical concern for unstable angina, and empirically started on heparin drip and dual antiplatelet therapy. He underwent a CT coronary angiogram, which revealed high-grade stenosis of 90-99% in the proximal to mid left anterior descending (LAD) artery, extending to the proximal first diagonal branch artery. His coronary artery calcium score was 5.2, which was greater than the 75th percentile for his age. The patient was subsequently taken for invasive coronary angiography, which confirmed the proximal to mid LAD stenosis of 80-90% extending to a 90% ostial stenosis of the first diagonal branch. He underwent percutaneous coronary intervention with placement of 2.25x12mm Xience stent in the diagonal and a 2.25x38mm Xience stent in the LAD.

Discussion

Unstable angina can pose a diagnostic challenge for clinicians and requires both a high index of suspicion as well as a low threshold for cardiac evaluation. While chest discomfort is the most common symptom of unstable angina, atypical presentations such as isolated left arm pain can also be seen, particularly in women, older adults, and patients with diabetes.[1]

When evaluating a patient with left arm pain, unstable angina should be considered on the differential diagnosis, especially if the patient has significant cardiovascular risk factors as our patient did. Patients may describe the pain as a pressure, aching, or burning sensation, with or without radiation into the chest, shoulder, or down the left arm. Importantly, the pain in unstable angina may occur at rest, with minimal exertion, or with increasing frequency and severity compared to the patient's baseline symptoms.[1,2] Risk stratification methods such as the HEART score can be valuable in assessing the likelihood of acute coronary syndrome when the symptoms are suggestive of unstable angina.[2] Heart score will stratify patients into a low, moderate or high category for a major cardiac even when presenting with symptoms of an acute coronary syndrome (ACS). The acronym is H for history, E for ECG, A for age, R for risk factor and T for troponin level. Based on our patient’s history and physical exam, he had a score of 3 (moderately suspicious history, +1 and > 3risk factors: diabetes, hyperlipidemia and a family history of parent with cardiovascular

disease before the age of 65, +2). A score of 3 has a risk of major cardiac event of 0.8-1.7%.

While diagnostic tools such as the HEART score, EKGs, and imaging studies may be of use, unstable angina is often a clinical diagnosis. As such, normal findings on initial diagnostic testing does not rule out unstable angina. Depending on the patient's risk profile, stress testing, coronary CT angiography, or cardiac catheterization may be considered for definitive diagnosis.[1,3] Moreover, serial troponin assays are essential for differentiating unstable angina from non-ST-elevation myocardial infarction (NSTEMI), which should be excluded prior to further testing.

Unstable angina represents a critical point in the spectrum of acute coronary syndromes, where prompt intervention can prevent progression to myocardial infarction. Therefore, as was the case with this patient, a low threshold for admission and further evaluation is warranted in cases of left arm pain with a negative non-cardiac workup, especially those with multiple cardiovascular risk factors or known coronary artery disease. Management should follow current guidelines for acute coronary syndrome, including antiplatelet therapy, anticoagulation, and consideration for early invasive strategy in high-risk patients.[3,4]

REFERENCES

1. **Goyal A, Zeltser R**. Unstable Angina. 2022 Sep 18. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan–. PMID: 28723029.
2. **Lawton JS, Tamis-Holland JE, Bangalore S, Bates ER, Beckie TM, Bischoff JM, Bittl JA, Cohen MG, DiMaio JM, Don CW, Fremes SE, Gaudino MF, Goldberger ZD, Grant MC, Jaswal JB, Kurlansky PA, Mehran R, Metkus TS Jr, Nnacheta LC, Rao SV, Sellke FW, Sharma G, Yong CM, Zwischenberger BA**. 2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2022 Jan 18;145(3):e18-e114. doi: 10.1161/CIR.0000000000001038. Epub 2021 Dec 9. Erratum in: *Circulation*. 2022 Mar 15;145(11):e772. doi: 10.1161/CIR.0000000000001060. PMID: 34882435.
3. MedlinePlus. (2022, August 4). Unstable angina. U.S. National Library of Medicine. Available at https://medlineplus.gov/ency/article/000201.htm.
4. **Gulati M, Levy PD, Mukherjee D, Amsterdam E, Bhatt DL, Birtcher KK, Blankstein R, Boyd J, Bullock-Palmer RP, Conejo T, Diercks DB, Gentile F, Greenwood JP, Hess EP, Hollenberg SM, Jaber WA, Jneid H, Joglar JA, Morrow DA, O'Connor RE, Ross MA, Shaw LJ**. 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation*. 2021 Nov 30;144(22):e368-e454. doi: 10.1161/CIR.0000000000001029. Epub 2021 Oct 28. Erratum in: *Circulation*. 2021 Nov 30;144(22):e455. doi: 10.1161/CIR.0000000000001047. Erratum in: *Circulation*. 2023 Dec 12;148(24):e281. doi: 10.1161/CIR.0000000000001198. PMID: 34709879.