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Case Report

Spontaneous atraumatic heparin-induced hemarthrosis in a patient treated for non-ST-elevation myocardial infarction ☆☆☆

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ABSTRACT

Hemarthrosis secondary to heparin use is a scarce event, especially in patients with no underlying thrombophilia or platelet disorders. Although previously associated with thrombophilia, platelet disorders, or secondary to fibrinolytic therapy, to date, there are very few reported cases in contemporary literature for heparin-induced hemarthrosis. In this article, we report a case of left shoulder joint inferior subluxation secondary to heparin-induced hemarthrosis in an 81-year-old male with an extensive cardiac history and multiple comorbidities. This case report depicts a rare event and discusses its clinical implications aiding healthcare professionals in an early diagnosis and timely management.

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Introduction

Hemarthrosis is the presence of blood in the joint space and is a common cause of monoarticular joint swelling. It is essential to be aware of the signs and symptoms of hemarthrosis, as it can be a sign of an underlying medical condition and requires medical attention. The primary symptoms of hemarthrosis are joint swelling and pain, usually worse when the joint moves in specific directions [1].

The causes can be separated into traumatic and nontraumatic causes. The most common cause of hemarthrosis is trauma, such as from a fall or impact on the joint. Trauma can cause bleeding when there is a tear in the joint capsule or ligaments. Non-traumatic hemarthrosis may be caused by bleeding disorders that are either hereditary or acquired. Hereditary bleeding, such as hemophilia, is a common cause of hemarthrosis [2]. Examples of acquired causes of hemarthrosis include anticoagulant medications, osteoarthritis, septic arthritis, and vascular fragility due to vitamin C deficiency [3–6].

Hemarthrosis may be suspected based on history, physical examination, or imaging studies, but a definitive diagnosis usually requires joint aspiration [5]. Hemarthrosis can be seen in imaging studies such as radiography, CT, or MRI. Point-of-care ultrasound can be used in emergencies when CT or radiography is not immediately available [7]. The management may vary slightly depending on the etiology. The initial therapy should be immobilizing the affected joint by applying ice and compressing the joint. Aspiration of the joint may provide immediate pain relief [8]. An orthopedic surgeon should evaluate patients with significant trauma and hemarthrosis. Patients

with hemarthrosis caused by coagulation disorders should address treating the underlying disorder. Selective COX-2 inhibitors, such as etoricoxib and celecoxib, are effective in patients with hemophilic arthropathy [9]. Therapeutic arthrocentesis is reasonably tolerated by patients receiving anticoagulation [10].

Case report

An 81-year-old male patient with an extensive cardiac history (triple bypass CABG in 2003 with repeated successive angioplasties and a history of atrial fibrillation) presented to the emergency department (ED) with complaints of chest pain radiating to the right jaw after dinner. Subsequently, the pain was relieved by taking 2 doses of 0.4 mg sublingual nitroglycerin tablets and 2 Gaviscon tablets (antacids). The patient experienced another episode of chest pain an hour later with the same characteristics prompting his ED visit. On presentation, the patient's vitals were; heart rate (HR) of 78 beats/min, respiratory rate (RR) of 17 breaths/min, blood pressure (BP) of 158/78 mmHg (104), and SpO₂ of 98% on room air. The patient was placed on a cardiac monitor, and aspirin 162 mg and a nitroglycerin drip were initiated, further relieving his symptoms. Two hours later, his chest pain returned, prompting further cardiac workup and consultation. Then the patient was started on a heparin infusion as per the cardiology recommendation. The electrocardiogram demonstrated sinus rhythm with 1st-degree atrioventricular block and right bundle branch block (Fig. 1). His chest X-ray was significant for mild ground-glass opacities in both lung bases, and no signs of

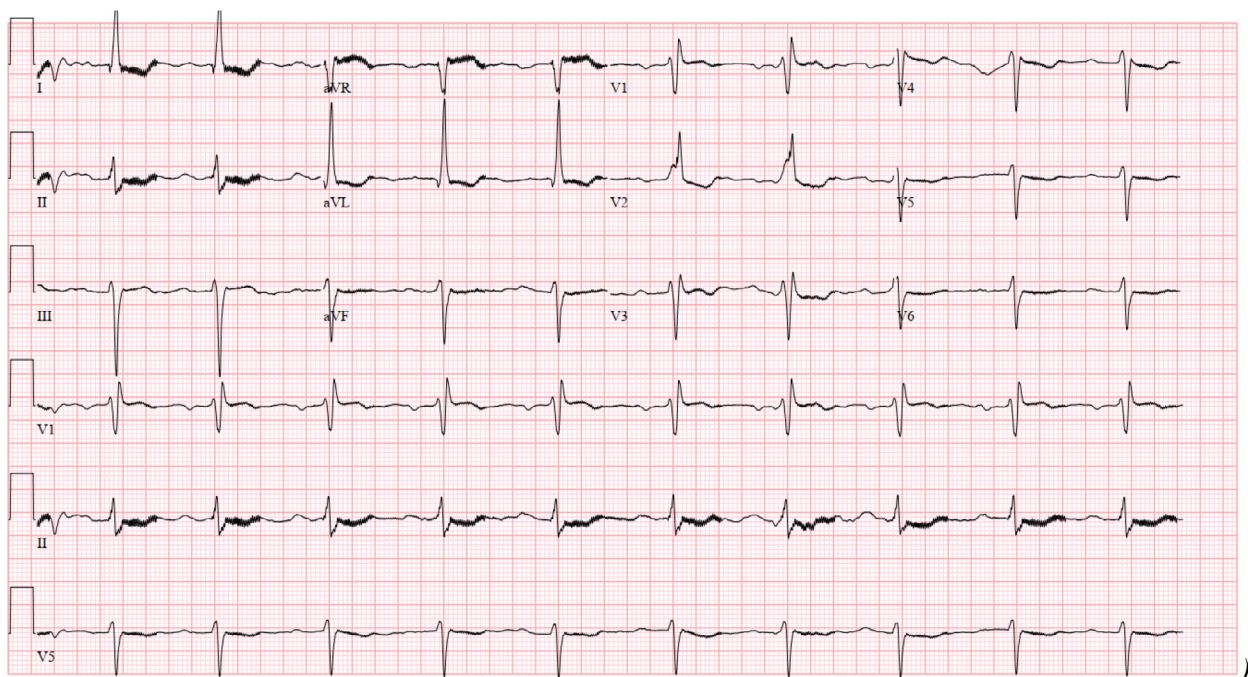


Fig. 1 – Electrocardiogram depicts a normal sinus rhythm with first degree atrioventricular block with right bundle branch block (RBBB).



Fig. 2 – Chest X-ray showing mild ground glass opacities in both lung bases with enlarged cardiomeastinal silhouette. Dual-lead pacemaker overlies left upper chest.

lobar consolidation, pleural effusion, or pneumothorax (Fig. 2). The patient was admitted to the cardiac intensive care unit for further monitoring and possible cardiac catheterization. During admission, the patient's chest pain had resolved and troponins reported were 21.4, 37.8, and 36.3; CK: 44 U/L. The decision was made to undergo a nuclear stress test (NST) the following day for further cardiac evaluation.

On the day of his NST, the patient began to experience an insidious and progressive left shoulder pain reproducible to passive and active range of motion, non-responsive to escalating pain management regimens. Conservative pain management was done initially with ibuprofen 400 mg per oral (PO) and gradually advanced with ketorolac 10 mg PO, cyclobenzaprine 5 mg PO, Percocet 5/325 mg PO, and morphine 2 mg intravenously. The patient reported mild pain relief for the next 30-60s mins duration and eventually reported 10/10 pain again. A left shoulder X-ray was done, which showed inferior displacement of the left humeral head on the glenoid fossa and some radiolucent appearance consistent with a possible effusion (Figs. 3A & B). No periosteal reaction or bony or arthritic changes were seen in the left shoulder. Antiplatelet therapy, heparin, and nitroglycerin infusion were held due to suspicion of possible hemarthrosis of the left shoulder. The orthopedic surgery team was consulted, and the decision was made for therapeutic arthrocentesis of the left shoulder. Under sterile preparation, the left shoulder glenohumeral joint was aspirated, and 20 mL of frank bloody fluid was collected. Following the procedure, the patient had immediate pain relief.

The patient's NST results showed an abnormal Lexiscan stress myocardial perfusion imaging study consistent with his multivessel disease and a dilated left ventricle with normal function. As per his pertinent orthopedic history, he reported a fall on his left shoulder about 2 weeks earlier, accompanied by left shoulder pain that self-resolved with conservative measures at home. The patient also reported a history of cortisone injections to both shoulders 18 months before this event due to osteoarthritis. The decision was made to continue his routine home medication dabigatran 150 mg PO BID and clopidogrel 75 mg PO daily, given his history of atrial fibrillation, extensive coronary artery disease, and history of in-stent restenosis. Given his presentation and the risk of recurrent bleeding, the patient was proposed to consider left atrial appendage closure as the next step for atrial fibrillation management and was advised to continue routine follow-ups with his orthopedic surgeon and cardiologist on discharge. The patient had a follow-up visit 8 weeks later. He reported having his left shoulder pain resolved.

Discussion

Despite the widespread use of heparin, hemarthrosis of the shoulder is an infrequent complication. This patient had severe left shoulder pain despite multiple analgesics. The worsening pain could have easily been mistaken for a symptom

of another episode of non-ST-elevation myocardial infarction (NSTEMI) or myocardial infarction. The patient's history of a fall on his left shoulder 2 weeks prior, combined with the use of heparin, was enough reason to suspect hemarthrosis. In our patient, the diagnosis was confirmed by X-ray. Point-of-care ultrasound may also be used to diagnose hemarthrosis accurately [11].

After an episode of hemarthrosis, the decision must be made whether to continue or stop anticoagulation. First, the risks and benefits of discontinuing anticoagulation must be evaluated, before abruptly stopping the drug. Temporary cessation of anticoagulation may improve the hemarthrosis but may worsen anginal symptoms. Continuing the anticoagulation may cause extended symptoms of hemarthrosis or even recurrent episodes. Dalrymple et al. conducted a retrospec-

tive review of 31 patients admitted with spontaneous joint hemarthrosis who were on oral anticoagulants. The study reported a majority of the patients had their anticoagulation held temporarily and concluded that continuing anticoagulants did not increase the length of hospital stay [12]. Although severe hemarthrosis following heparin therapy is rare, this complication should be recognized and treated. Joint aspiration can have both diagnostic and therapeutic value. As per evidence, patients on warfarin undergoing joint aspirations are at low risk for complications [10].

This case report presents a unique presentation that can mimic acute on chronic cardiac complications in the setting of chest pain and shoulder pain in patients with underlying cardiac comorbidities. We recommend considering acute musculoskeletal disorders in patients receiving antiplatelet and fib-

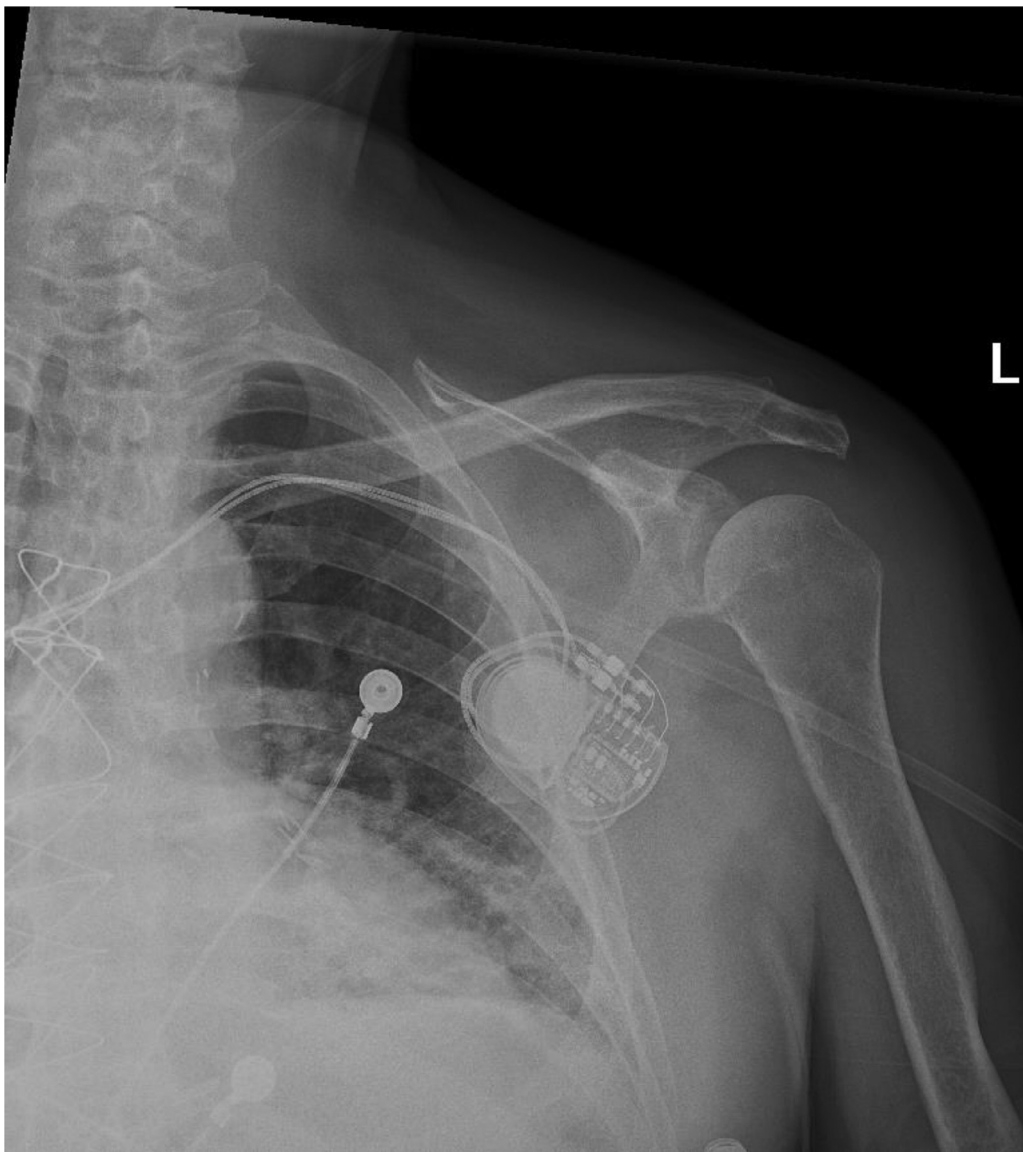


Fig. 3 – (A) Left shoulder X-ray (anteriolateral view) depicts inferior displacement of the left humeral head on the glenoid fossa (pseudosubluxation) secondary to joint effusion consistent with hemarthrosis. (B) Left shoulder X-ray demonstrating inferior displacement of the left humeral head on the glenoid fossa.



Fig. 3 – Continued

rinolytic therapy presenting with chest pain or shoulder pain out of proportion which is unresponsive to escalating pain regimes.

Patient consent

The case information in this manuscript has been provided with informed consent from the patient presented.

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