



CASE REPORT : DIABETIC MYONECROSIS , RARE BUT A SERIOUS COMPLICATION OF UNCONTROLLED DIABETES MELLITUS

General Surgery

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ABSTRACT

Diabetic myonecrosis , is a serious complication of long standing suboptimal glycemic control observed in both type 1 and type 2 diabetes. It presents with abrupt pain and swelling of the involved extremity. Diagnosis is often delayed because it mimics several other conditions such as cellulitis, deep vein thrombosis(DVT). We present a 41 year old male with type 2 diabetes mellitus with localized , sudden onset left sided thigh pain. The left thigh pain progressively worsened with decreasing range of motion of left hip and knee joint .Diagnostic evaluation was done for this patient which included blood work up and imaging , pointing towards diabetic myonecrosis. Patient underwent fasciotomy for pain control and muscle biopsy for accurate diagnosis . Patient made an uneventful recovery and is under follow up. Myonecrosis is less known microvascular complication of diabetes and should always be kept in mind when evaluating a diabetic patient with muscle pain. The clinical course is self limiting and patients respond well to supportive medical therapy that involves bed rest , glycemic control along with analgesics .

KEYWORDS

INTRODUCTION:

Diabetic myonecrosis is an underreported complication of long standing suboptimal glycemic control which is usually self limiting and responds well to conservative management. It affects patients with either type 1 or type 2 diabetes , the mean age of presentation is 37 years with a reported range of 19-64 years. The female to male ratio is 1.3:1, other diabetic complications are also present in patients with diabetic myonecrosis. Its major symptom is acute onset muscle pain . Though the exact cause is still unknown ,atherosclerotic occlusion ,hypoxia-reperfusion injury or vasculitis with thrombosis are the proposed theories .The common differential diagnoses for diabetic myonecrosis are trauma, deep vein thrombosis , hematoma, abscess, fasciitis , inflammatory myopathies, myositis associated with connective tissue diseases, infiltrating neoplasm, rhabdomyolysis, vascular causes and delayed onset muscle soreness(DOMS). All of these can be ruled out with detailed history and focused blood and radiological investigations.[1]

Case report :

A 41 year old male , presented to the opd with left thigh pain of one month duration, which started as mild discomfort, followed by increasing intensity over 2 weeks. He was a known diabetic not on regular medications. Pain was squeezing in nature, non radiating , aggravates with motion and confined to left anterolateral thigh . Patient denied any history of trauma. Systemic examination was unremarkable. Patient was well built with BMI of 25.1kg/m², on examination of the musculoskeletal system, right and left upper limbs were normal, right lower limb revealed pre gangrenous changes of the 5 th toe, on examining the left lower limb anterolateral compartment of thigh was swollen with induration, warm and tender on palpation, but no surrounding erythema seen.

Initial lab work up upon admission revealed no leukocytosis 7.1 (N 4-11), ESR -93(N 0-15), Creatine kinase 297(N 46-171) , Post prandial sugar 171, HbA1c 13.5, urine glucose +++, serum creatinine 1.2, albumin spot urine was 1068.92 (N<20 mg/dl). Creatinine spot urine was 21.52 , spot urine albumin/ creatinine was 4967.10 (n <30mg/g). urinalysis showed protein ++, sugar +++, ketone nil, albumin 3.7 g/dl (n 3.5-5.2g/dl).

Imaging was done, clinically suspecting possible DVT using sonographic doppler of both lower limbs, which didn't reveal any DVT or arterial insufficiency, the anterolateral thigh was screened which showed edematous subfascial plane along with subcutaneous plane with minimal collection, possible suspicion of early changes of

myonecrosis due to etiological features such as diabetes, to confirm an MRI was also done which revealed Diffuse cellulitis and edema involving subcutaneous, intramuscular and intermuscular plane in the anteromedial and lateral compartment of the left thigh ,representing myositis or myonecrosis, circumferentially extending from soft tissues in the pelvis to the left knee joint. A collection of size 2.2*1.5 cm is noted in the vastus lateralis muscle in the mid thigh.

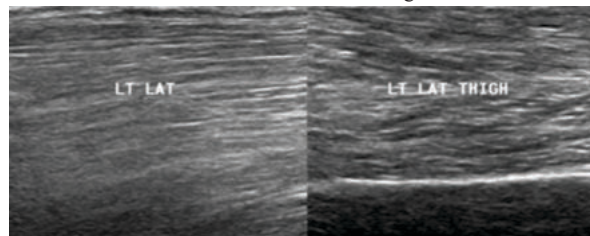


Figure1 a) ultrasound of the left lateral thigh showing edematous subfascial plane.

b) Panoramic view of the lateral compartment of the left thigh showing sonographic changes .

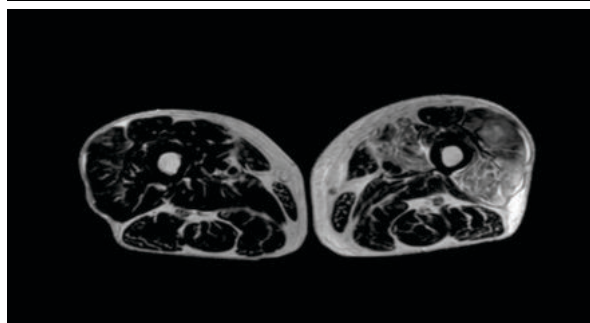
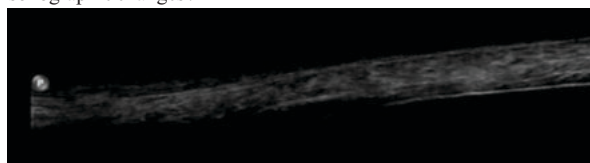


Figure2:T2 weighted MRI showing hyperintense areas over the left lateral thigh suggestive of myositis .

Patient was admitted and optimization of diabetes was done after referral to a diabetologist, vascular surgeon opinion was taken in view of the pre-gangrenous changes of the right 5th toe and the unremitting left thigh pain. Due to severe pain, not responding to regular pain medications, patient was advised surgery. Patient underwent fasciotomy of the left anterolateral compartment of thigh, with biopsy of the left vastus lateralis muscle, intraoperatively the involved compartment had no abscess collections, some amount of exudative fluid observed and was sent for culture and sensitivity. The involved muscle compartment looked dusky brown in color with hard on palpation, vastus lateralis muscle bits were sent for biopsy, patient tolerated the procedure well, to control postoperative pain, patient was given an lumbar plexus block. Pain physician opinion was taken and the patient was given adequate pain relief which were gradually tapered off.

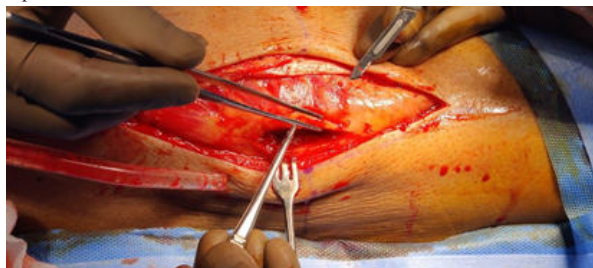


Figure 3: Involved left vastus lateralis muscle looks hard and dusky brown in color, there was no evidence of any abscess collection

Exudative fluid did not grow any bacteria, biopsy report showed signs of myofiber necrosis with prominent endomysial necrotic debris, mixed inflammation and patchy small vessel vasculitis. With histopathology showing features of small vessel vasculitis along with the pre-gangrenous changes of the 5th toe, a thorough vasculitis panel was ordered, which came back negative to all the antibody markers. Patient recovered well and was discharged on POD 3 and was advised with regular follow up with a diabetologist and pain physician.

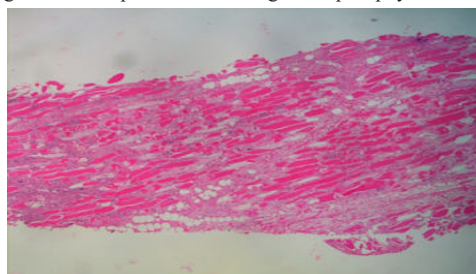


Figure 4) patchy myofiber necrosis with inflammatory infiltrate

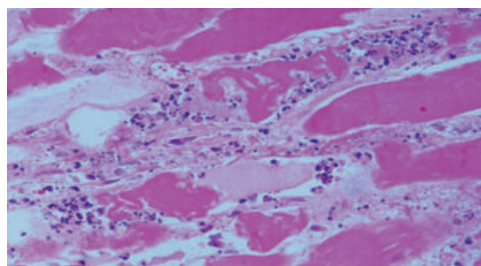


Figure 5) high power field of myofiber necrosis with karyohetic debris

DISCUSSION:

Diabetic myonecrosis, also known as diabetic muscle infarct, is a rare complication of diabetes mellitus[4], especially in patients with long standing and poorly controlled diabetes mellitus.[2] It was first described by Angervall and Stener in 1962.[2] The average age of presentation is 40 years, and it is more common in women and type 1 diabetes. Patients commonly present with abrupt onset of pain, tenderness and edema of the involved extremity.

The pathogenesis of diabetic myonecrosis also called as diabetic muscle infarction is uncertain. One plausible theory is that diabetic microangiopathy and/or arteriosclerosis lead to ischemia of muscle and this results in an intense inflammatory response, edema, hyperemia, and reperfusion.[3] These events further ischemia by

generation of reactive oxygen radicals and from pressure within the fascial compartment. This cycle of hypoxia-reperfusion injury eventually culminates in infarction. In addition, the presence of a hypercoagulable state in diabetes, including elevated concentrations of factor 8, fibrinogen, thrombomodulin, and antiphospholipid antibodies, and the decreased levels of prostacyclin, antithrombin, and tissue plasminogen activator, may contribute to a thrombotic state.[3]

Areas most commonly affected include quadriceps(60-65%), hip adductors(13%), hamstrings (8%), and hip flexors (2%).[4] Similar presentation may also be seen in pyomyositis, necrotizing fasciitis, deep vein thrombosis, soft tissue abscess, cellulitis, hematoma, and acute compartment syndrome.[5] Myonecrosis presents with a tender muscle and slightly elevated total leukocyte count, creatine phosphokinase, and ESR.[6] MRI is the best investigation for diagnosis. The characteristic feature of diabetic myonecrosis in MRI is an increased signal in T2-weighted, inversion-recovery, and gadolinium-enhanced images and isointense or hypointense areas on T1-weighted images.[7]

Diabetic myonecrosis is a self-limiting condition resolving over weeks to months.[4] Treatment is supportive, consisting of analgesics, rest and optimizing blood glucose control. Physical therapy may make the condition worse. There has been a suggestion that antiplatelet agents or anti-inflammatory agents may quicken time to resolution. Recurrence at the same or different site occurs in 50% of cases. Patients' long term prognosis is poor, because diabetic myonecrosis (diabetic muscle infarction) reflects an underlying vascular disease.[7]

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