

CASE REPORT

A Rare Case of Diabetes Muscle Infarction

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ABSTRACT:

Though Diabetes Mellitus (DM) is very common disease worldwide, Diabetic Muscle Infarction (DMI) is very rare complication of Diabetes Mellitus. Till date less than 200 cases have been reported in literature. DMI is also known as Diabetic myonecrosis/Diabetic Muscle Ischemia. It was first described by Angervall & Stener in 1965. It is a rare atherothrombotic or coagulopathic complication occurring in patients with long term history of uncontrolled and advanced Diabetes Mellitus in association with retinopathy, nephropathy & neuropathy. Patient presents with focal acute severe pain and swelling and occasionally palpable mass, most commonly affecting lower extremity mainly involving thigh muscles followed by calf. Most of the time it is unilateral but very few cases of simultaneous bilateral involvement have also been reported.

Biochemistry shows an elevation of C-Reactive protein, but Creatine kinase is often normal. Hematology shows increased ESR and elevated HbA1c. Diagnosis is made by clinico-radiological basis. MRI is investigation of choice. Biopsy & contrast studies are relatively contraindicated due to associated co-morbidities.

Differential diagnosis includes Polymyositis, Hemorrhage, Abscess, Necrotizing Fasciitis and other form of myopathy. So, it is important to rule out DMI if patient present with acute pain and swelling involving lower extremity before doing any intervention.

DMI resolves spontaneously with conservative management within few weeks. Immobilization &

Analgesics play some role in early recovery. But in un-resolving cases it can cause compartment syndrome. Short term prognosis of DMI is good with recurrence rate of 47.82%, But long-term prognosis associated with significant morbidity and mortality within 5 years.

INTRODUCTION

Diabetic Muscle Infarction(DMI) also known as Diabetic Muscle Ischemia or Diabetic Myonecrosis was first described by Angervall & Stener in 1965 as tumor form of focal degeneration of involved muscle^{1,2,3}. DMI is a rare atherothrombotic or coagulopathic complication, occurring in patients with long term history of poorly controlled and advanced diabetes in conjunction with end organ failure e.g. nephropathy, neuropathy and retinopathy¹⁻⁴.

DMI clinically presents classically as abrupt onset of focal pain and swelling developed within days or weeks. This may be associated with focal palpable mass¹⁻⁴. It classically involves lower extremity mainly thigh (Quadriceps is most common involved muscle) with sparing of Sartorius & Rectus femoris, followed by calf muscle. There is absence of leukocytosis or other constitutional symptoms^{1,3,4}.

DMI can be diagnosed based on clinico-radiological findings supported by Biochemistry and Hematology. Muscle biopsy and contrast study are relatively contraindicated because of associated complications such as symptoms exertion, seromas, hematomas, poor wound healing, infections and nerve palsies. MRI is the investigation of choice^{1,2,4}.

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DMI resolves spontaneously over period of time with conservative treatment and Immobilization^{1,4}.

Our Case report describes the MRI findings with pattern of Imaging, muscle involvement in association with clinical and laboratory parameters, which may help clinicians to avoid a potentially harmful biopsy and other interventions.

CASE REPORT

A 49-year-old male, known case of long term Diabetes Mellitus and Hypertension on Oral hypoglycemic agents presented with two weeks history of severe pain and swelling in Left thigh with difficulty in walking. There was no history of trauma.

Local examination of left thigh showed tender, diffuse swelling with warm skin and indurations of anterior, medial and posterior region. Patient had acute on chronic kidney disease. Rest of other systemic examinations was within normal limits. Biochemistry report showed low serum albumin (1.8 gm/dl), High globulin (4.4 gm/dl), reverse serum albumin-globulin ratio (0.4), increased alkaline phosphatase (434 U/l), low serum calcium (6.5 mg/dl), high creatinine (4.3 mg/dl), and high serum urea and blood urea nitrogen. His HbA1c was 13.5 and ESR 133 mm Hg/hr. His hemoglobin was 9 gm/dl, platelet 600000/mm³ and total leukocyte count 22000/mm³.

MRI Findings showed diffuse T2 and STIR hyper-intense signals in left thigh involving anterior and medial compartment muscles i.e., Vastus medialis, intermedius and lateralis, gracilis, adductor muscles belly and biceps femoris muscle of left thigh with sparing of sartorius and rectus femoris muscle.

Edema and hemorrhagic foci were noted in posteromedial aspect of vastus medialis and intermedius muscle. Sub fascial fluid was noted along the muscles of medial compartment of left thigh and thickened subcutaneous tissue with inflammatory changes noted in the medial aspect of left thigh.

Patient was treated conservatively (after attempting Incision and Drainage which didn't improve patient condition) with insulin, analgesics, antihypertensive and physiotherapy. He recovered well and was discharged.

DISCUSSION

DMI or Diabetic Myonecrosis is a rare complication of long standing, poorly controlled and

advanced Diabetes Mellitus in association with stigmata of nephropathy, retinopathy & neuropathy. After it was described by Angervall & Stener 50 years back, less than 200 cases have been reported in literature^{1,2}. In the systemic review done by Trujillo S. et al, they found that DMI more involving women (61.5%) with mean age of presentation 42.6 years, Patients with DM Type-1 (59%) and the mean duration of disease approximately 14.3 years. We are reporting a case of DMI with Type-2 DM in a male patient.

Several hypotheses have been suggested for patho-physiology of DMI including atherosclerotic occlusion, coagulopathic vasculitis with thrombosis or hypoxic-reperfusion injury^{2,3}.

The Clinical onset of DMI is sudden, within days to weeks and patient presents with acute severe pain, swelling and occasionally mass effect involving mainly lower extremity especially thigh (80%), followed by calf muscles (20%)^{1,3}. There is characteristic absence of fever and other constitutional symptoms². The vastus group of muscles are most frequently affected with relative sparing of rectus femoris and sartorius muscle with a possible explanation may be the small size, superficial location and with better collateral blood supply. The involved part is hot, tender, indurate with swelling and pain. With these presenting features it mimics with necrotizing fasciitis, abscess, polymyositis, hematomas, cellulitis or other forms of myositis and acute compartmental syndrome^{2,3}.

Though laboratory investigation may help but are non-specific for making diagnosis. Creatine kinase is elevated in 50% cases but may be normal³. Elevated ESR in ~ 50% of cases³. HbA1c level >7% suggests severity and poorly controlled DM and well associated with onset of DMI³. Biopsy is contraindicated because associated complications such as symptoms exertion, seromas, hematomas, poor wound healing, infections and nerve palsies¹⁻³.

MRI is investigation of choice^{1,4} and findings include hyper-intense signal on T2, STIR & contrast enhancement in the affected muscles. A central low signal surrounded by a rim of high signal on gadolinium enhanced T1-Wt images suggests muscle infarction and necrosis. A hyperintense area within a muscle on unenhanced T1-Wt images indicative of hemorrhage¹.

Sonographic evaluation of DMI shows internal linear echogenic structures coursing through the lesion,

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absence of internal motion or swirling of fluid with transducer pressure and lack of predominantly anechoic area by B.K. Choudhury et al⁵.

DMI is remitting complication with spontaneous recovery. It responds well to conservative treatment & immobilization. Main stay of treatment is analgesics & bed rest. Supportive drugs may be Anti-inflammatory, Anti platelets and Corticosteroids³.

CONCLUSION

In conclusion, DMI is very rare complication of poorly controlled, advanced Diabetes Mellitus seen after or in conjunction with nephropathy, neuropathy and

retinopathy. Patient commonly having micro or macro angiopathies and presents as acute onset of pain and swelling involving lower extremities and may be associated with difficulty in walking. MRI is investigation of choice & biopsy should be avoided due to further complications. DMI resolves spontaneously & responds well to conservative management. Short term prognosis is good but long-term prognosis is poor & most of the patients die within 5 years. DMI should be taken in account as differential diagnosis for patients with painful swelling muscles.

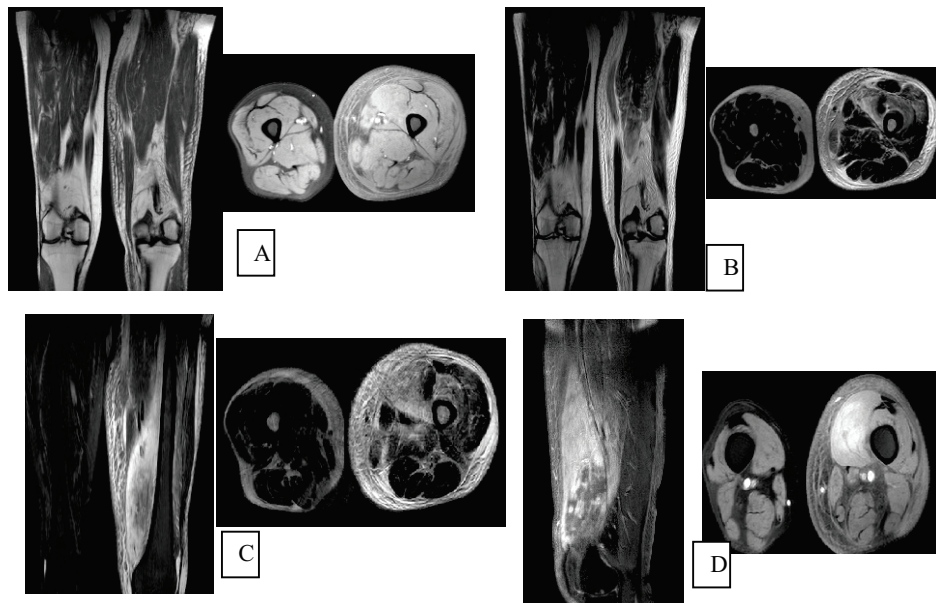


Figure 1: A) Right upper corner - T1 coronal and axial- hyperintense signals in medial and anterior compartment of left thigh
B) Left upper corner - T2 coronal and axial- hyperintense signals in medial and anterior compartment of left thigh. Right thigh muscles show normal signal intensity.
C) Right lower corner- STIR coronal and axial- hyperintense signals in medial and anterior compartment of left thigh
D) Left lower Corner- T1 FS Post contrast saggital and axial-contrast enhancement with few non enhancing areas within anterior and medial compartment of left thigh.

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