

# Fatal Case Of Solid Organ Infarcts In a Case Of Myelodysplastic Syndrome (MDS) With Refractory Anaemia

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**Abstract**—Myelodysplastic syndrome (MDS) usually presents with cytopenias because of bone marrow failure. Solid organ infarcts in myelodysplastic syndrome (MDS) is rarest complication. We report an elderly male, admitted with complaints of pain abdomen mainly in both flanks and swelling all over the body. Peripheral blood smear, bone marrow aspirate for cytology were suggestive of myelodysplastic syndrome(MDS) with refractory anaemia. Fluorescence in situ hybridization(FISH) were negative for any chromosomal abnormalities. His CECT abdomen was done which revealed hepatosplenomegaly with hyperdense liver with multiple splenic and renal infarcts and patient was treated as a case of MDS with refractory anaemia with solid organ infarcts. Over a period of 3 days, he had Acute Kidney Injury (AKI). Patient succumbed on fifth day.

**Keywords**—Myelodysplastic syndrome (MDS), renal infarct, splenic infarct, a case report.

## I. INTRODUCTION

Myelodysplastic syndrome (MDS) refers to “heterogenous group of bone marrow disorders characterized by clonal hematopoiesis, progressive bone marrow failure, and a propensity to transform into acute myeloid leukaemia (AML)”(1,2). MDS generally presents with anaemia, often with thrombocytopenia and neutropenia. Pathogenic features on bone marrow aspirate shows normal or hypercellular along with dyserythropoietic changes, which is the evidence of ineffective blood production. The complications of MDS are related to cytopenia and the progression to Acute myeloid leukaemia(1,2). Prognosis of MDS is evaluated by IPSS(International Prognostic Scoring System) score which considers cytogenetics, Bone marrow blasts(percent), haemoglobin, platelets and absolute neutrophil count.

Bleeding manifestations in MDS is related to thrombocytopenia and worsened due to platelet dysfunction (3). Acute thromboembolism, which is leads to occlusion of blood supply and causing organ infarction, is rare in patients with MDS. Uptill now, we came across three cases of thrombosis in MDS, one case of cerebral infarct, second case of splenic infarct and third case of Deep vein thrombosis(DVT)(4,5,6). We report a case of MDS presenting with bilateral renal, splenic infarction.

## II. CASE REPORT

A 63 years old elderly male patient presented with 4 days

history of pain in abdomen in bilateral flanks, and swelling all over the body . He had no history of constipation or obstipation, haematuria, or oliguria. He had history of receiving multiple blood transfusions in the past. Patient denied past medical history of hypertension, diabetes, coronary artery disease. On examination, he was mesomorphic, febrile, had pulse rate of 112 bpm, his Blood pressure was 130/90 mm Hg. He had severe pallor, pitting oedema feet and periorbital oedema. On abdominal examination, his spleen palpable at 2 cm below the left coastal margin. There was diffuse tenderness all over the abdomen. Guarding or rigidity over the abdomen was absent.

Laboratory investigations revealed the following values. Haemoglobin 6.2 mg per dL, haematocrit 18.7 mg per dL, Reticulocyte index 0.3%, Platelets 3,45,000/mm<sup>3</sup>, WBC count was 8,100/mm<sup>3</sup> with 79% neutrophils, 2% eosinophil, 2% monocyte. His Absolute Neutrophil count was 6399/mm<sup>3</sup> Biochemical tests reveals S. Albumin 3.7 gm per dL, Total serum protein 6.5 gm per dL, Aspartate transferase and Alanine transferase were 130 and 108 IU/L respectively, urea 68 mg per dL, creatinine 0.9 mg per dL, serum Na<sup>+</sup> and K<sup>+</sup> were 130 and 5.2 meq per L respectively. Urine routine and microscopy showed mild proteinuria. Peripheral smear of blood revealed dimorphic blood picture showing macrocytes with microcytic, mildly hypochromic RBCs with moderate anisopoikilocytosis showing tear drop cells, pencil cells, target cells and occasional tactoid cells. Bone marrow aspirate for cytology revealed hypercellular marrow with erythroid hyperplasia with bilineage dysplasia with dyserythropoietic changes with blast cells of < 2%. His Serum vitamin B12 were >1000 ng/ml and S.ferritin levels were >1000 ng/ml. On Fluorescence in situ hybridization De5q, De7q, De20q, Trisomy 8 were found to be negative. Flow cytometry test for PNH(CD 55,CD 59) revealed normal study. . In view of high B12 with megaloblastic bone marrow, patient was diagnosed as MDS with IPSS score of 3. CECT abdomen was done for determining the cause of abdominal pain. It revealed hepatosplenomegaly with hyperdense liver with multiple splenic and renal infarcts as shown in fig 1. His 2DECHO and renal doppler was done to rule out thromboembolism as a cause of splenic and renal infarct. 2DECHO was normal and bilateral renal doppler was normal.

In view of low haemoglobin count, 2 units of packed RBCs were transfused. In view of severe pain in abdomen, Tab morphine was administered for pain relief after ruling out surgical abdomen. Patient was treated with injection meropenem, levofloxacin, injection darbepoetin every

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second week, capsule danazole and other supportive management. Family and patient refused aggressive therapy for MDS. During next 48 hours of hospital stay, he developed renal insufficiency and landed with Acute Kidney Injury. He underwent SLED daily but patient's condition steadily deteriorated. Patient succumbed to his illness on fifth day in hospital.

### III. DISCUSSION

We present a unique case of bilateral renal and splenic infarct in a MDS- RA. Uptill now, we came across three cases of thrombosis in MDS, one case of DVT, second case of cerebral infarct and third case of splenic infarct(4,5,6). They are summarised in table 1.

Myelodysplastic syndrome(MDS) is the most commonest haematological disease with an incidence of MDS of around 4 per 1,00,000 population per year(7).MDS presents with signs of hematopoietic insufficiency, particularly symptoms of anaemia, less often susceptibility to infection and bleeding.

**Table-1** summarized organ infarction in myelodysplastic syndrome.

Study name	No. of cases	MDS type	IPSS score	Site of thrombus	Prognosis (Survived/Death)
Bae et al	1	MDS-RA with excess blasts-2	3	Cerebral infarct	Referred to higher centres
Nalluru et al	1	Refractory cytopenia with multilineage dysplasia	NA	Splenic infarct	Survived
Niazy et al	1	MDS-RA	NA	DVT	Survived
Current study	1	MDS-RA	3	Renal and splenic infarct	Death

\*NA-Not Available

Various factors causing renal and splenic infarction were evaluated. The most common causes of renal infarction are thromboembolism from acute myocardial infarction, valvular heart disease, arrhythmias and atheromatous disease. Our patients 2D echo and renal doppler was normal, hence cardioembolic phenomenon was ruled out. On CECT abdomen there is no any evidence of aortic dissection. Multiple blood transfusions and chemotherapy with azacytidine can result in thrombosis. Our patient undergone multiple blood transfusions in the past, which may be the risk factor.



Fig. 1. CECT abdomen reveals bilateral renal infarcts(red arrow) and splenic infarct(blue arrow)

MDS has complex pathogenic features and diversified stages. In early stages of MDS, excessive programmed cell

death(apoptosis) is the predominant event with subsequent cytopenia and its variable degree with extent(8). Most of patients with MDS have no apparent cause(approximately 80%) and named as idiopathic or primary. Secondary MDS according to WHO develop years after exposure to known agents causing chromosomal damage such chemotherapy (alkylating agents, topoisomerase damage II inhibitors), radiotherapy, heavy metals(mercury, lead), viral infections, toxic chemicals(benzene, fungicide) and autoimmune condition.

MDS is classified by WHO in various subtypes : “i) Refractory anaemia (RA), ii) Refractory anaemia with ringed sideroblasts (RARS), iii) Refractory cytopenia with multilineage dysplasia (RCMD), iv) Refractory cytopenia with multilineage dysplasia and ringed sideroblasts (RCMD), v) Refractory anaemia with excess blasts (RAEB), vi) Myelodysplastic syndrome, unclassified (MDS-U), vii) MDS associated with isolated del(5q), viii) chronic myelomonocytic leukaemia(CMML) and Juvenile myelomonocytic leukaemia(JMML)”(9-11).

Peripheral smear in MDS usually reveals Anaemia , either alone or as a part of bi or pancytopenia with macrocytosis with hypogranulated large platelets. Neutrophils are hypogranulated, have hyposegmented, ringed or may contain Dohle bodies. Bone marrow is usually normal or hypercellular with dyserythropoietic changes and ringed sideroblasts in the erythroid lineage, hypogranulation and hyposegmentation in granulocytic precursors with an increase in myeloblasts and megakaryocytes showing reduced number of or disorganized nuclei. In our patient bone marrow revealed hypercellular marrow with erythroid hyperplasia with bilineage dysplasia with dyserythropoietic changes.

The main treatment for MDS is usually supportive care, particularly for symptomatic cytopenias or patients with high risk of infection/bleeding(12,13).Erythropoiesis stimulating agents may improve anaemia. Effective dose of erythropoietin is 60,000 IU/week(14). High-dose darbepoetin has been reported to produce a major erythroid response rate of around 50% patients(15,16). The use of erythropoietin along with granulocyte colony-stimulating factor(G-CSF) showed good results(17-19). Deferasirox (oral-chelating agent) is widely used in patients with MDS(20). Response rates to the combination treatment varies with classification. Likely responses are seen in patients with refractory anaemia and ring sideroblasts (RARS) and Responses which are less likely are seen in patients with excess blasts. The international prognostic scoring system(IPSS) is commonly used for risk assessment and therapy initiation. Revised IPSS score is useful to calculate prognosis. IPSS score of our patient is 3. Disease-modifying agents like Lenalidomide, Immunosuppressive therapy, DNA methyltransferase inhibitors, Acute myeloid leukaemia (AML) Induction type chemotherapy are also in practise. Among all, the only potentially curative treatment for MDS is allogenic Hematopoietic stem cell transplantation(HSCT). Most people with MDS dies due to causes belonging naturally to disease, but not due to progression to AML.

Treatment of renal artery infarcts is unknown. Therapeutic options include: a) systemic anticoagulation

with dialysis, b) Intraarterial thrombolytic therapy, c) surgical embolectomy(21). The above discussed modalities could not applied to the subject patient as there was small arterial embolization.

#### IV. CONCLUSION

Myelodysplastic syndrome presenting with solid infarcts is a rare entity which was the presentation in our patient. Any patient presenting with acute abdomen with myelodysplastic syndrome (MDS) urgent CECT abdomen is helpful for early detection and management of solid organ infarcts.

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#### VI. INFORMED CONSENT

Case report was made after seeking written informed consent from family members.

#### VII. ETHICAL APPROVAL

Ethical approval taken from Institutional Ethics committee

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