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Case Report

Spontaneous Tumor Lysis Syndrome in the Third Trimester of Pregnancy: A Rare and Life-Threatening Case Report

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Abstract

Background: Tumor lysis syndrome (TLS) is a fatal oncological emergency characterized by rapid release of intracellular contents following extensive breakdown of tumor cells. It is most commonly following with chemotherapy in hematological malignancies. Spontaneous tumor lysis syndrome (STLS), occurring in pregnancy is very rare, that to in absence of chemotherapy.

Methods: Retrospective institutional review of spontaneous tumor lysis syndrome in pregnancy.

Keywords: *Spontaneous Tumor Lysis Syndrome; Pregnancy; Third Trimester; Acute Kidney Injury; Hematological Malignancy; Emergency Medicine*

Introduction

Spontaneous tumor lysis syndrome (STLS) refers to TLS occurring in the absence of cytotoxic/chemotherapy and this is extremely uncommon in pregnancy. Pregnancy further complicates the clinical picture due to physiological changes, diagnostic challenges, and therapeutic limitations.

Reports of STLS occurring in the third trimester are extremely rare, with only isolated very few cases described in literature. 32-year-old Egyptian lady at 28 weeks of pregnancy presented with Acute spontaneous tumor lysis syndrome secondary to non-diagnosed acute leukemia (Non-Hodgkins lymphoma and patient gave birth to baby and died in few days [1]. There is a high incidence of TLS in tumours with high proliferative rates such as acute lymphoblastic leukemia and Burkitt's lymphoma.

The mainstays of TLS treatment and prophylaxis include aggressive hydration, control of hyperuricemia with allopurinol prophylaxis and Rasburicase treatment, hydration and monitoring of electrolyte abnormalities [2]. Tumor lysis most commonly observed among AML with induction chemotherapy and among them who develop clinical tumor lysis syndrome have high induction mortality [3]. TLS can also occurs rarely in solid tumors [4]. Management of acute leukemia in pregnancy is challenging and high risk, it requires a multidisciplinary care, gynecologist, haematologist, considering the gestational timing of presentation of ALL, cytogenetics, clinical profile, and active medical issues at diagnosis [5]. To prevent neonatal myelosuppression and count to recover during child birth, ideally chemotherapy should be withheld 3 weeks prior to delivery [6]. The planned delivery is helpful in these case scenarios and Another option for patients presenting 3rd

trimester is to initiate pre-induction with steroids alone and then to start chemotherapy after child birth [7]. Rasburicase is used in TLS pregnancy with benefit overweigh risk, its reported that Rasburicase showed teratogenicity in animal studies [8].

We present a rare and life-threatening case of spontaneous tumor lysis syndrome in a third-trimester primigravida, highlighting diagnostic challenges, emergency management, and the importance of multidisciplinary care.

Case Presentation

A 22-year-old primigravida at 32 weeks of gestation was referred from a primary health center with complaints of multiple episodes of vomiting for 3 days, headache for 3 days, and giddiness for 1 day. There was no history of fever, seizures, trauma, bleeding manifestations, or prior chemotherapy. Antenatal period until presentation was reportedly uneventful.

On examination, the patient appeared pale, ill-looking, and dehydrated with sunken eyes. Vital signs showed tachycardia and hypotension. Obstetric examination revealed a gravid uterus of 32 weeks corresponding to gestational age, with a single live intrauterine fetus.

Initial laboratory investigations revealed severe leukocytosis (WBC 245,000/µL), hemoglobin 7 g/dL, and platelet count of 3,000/µL. Renal function tests showed elevated urea (60 mg/dL) and creatinine (2.8 mg/dL), consistent with acute kidney injury. Biochemical evaluation showed hyperuricemia, hyperphosphatemia, hyperkalemia, and hypocalcemia, fulfilling Cairo-Bishop criteria for tumor lysis syndrome. Peripheral smear showed acute leukemia with blast cells more than 90% and subsequent hematological evaluation like flow cytometry confirmed B Cell ALL were suggestive of an underlying acute hematological malignancy.

A diagnosis of spontaneous tumor lysis syndrome complicating third-trimester pregnancy was made. The patient was immediately started on aggressive intravenous hydration, Rasburicase infusion, correction of electrolyte abnormalities, and blood component transfusions including packed red blood cells and platelet concentrates. Continuous cardiac and fetal monitoring were done. Nephrology and medical oncology consultations were obtained, and renal replacement therapy was planned in view of worsening renal function.

Despite aggressive multidisciplinary approach patient started on Tab prednisolone before induction chemotherapy, patient had preinduction chemotherapy induced neutropenia treated with recombinant granulocyte colony stimulating factor [9], platelets count increased to 30000, blast cells started decreasing, with high risk consent patient underwent induction of labour on 3rd day of admission, delivered a healthy male baby of 1.6 kg, post labour uneventful, after 8 days of prednisolone therapy, bone marrow examination showed blast cells decreased to less than 10% and patient stated on induction chemotherapy. Patient pt tolerated well, now presently patient completed chemotherapy.

Discussion

Spontaneous tumor lysis syndrome is a rare but extremely devastating condition, particularly in pregnancy. Physiological changes of pregnancy, including increased plasma volume, altered renal parameters and handling of electrolytes, and hypercoagulability, further complicate the clinical course.

Most reported cases of STLS are associated with high tumor burden, rapid cellular turnover, and high chemosensitivity. In pregnancy, diagnosis may be delayed due to overlapping symptoms such as vomiting, fatigue, and anemia. Acute kidney injury and electrolyte disturbances leads to significant risks to both mother and fetus.

Early diagnosis based on laboratory evaluation and prompt medical therapy are crucial. Management includes aggressive hydration, uric acid-lowering agents such as Rasburicase, Rasburicase usage in 3rd trimester only one case published in literature and we used Rasburicase and did not see any adverse fetal outcomes [10]. Correction of electrolyte abnormalities, and renal replacement therapy when indicated. Recombinant granulocyte colony-stimulating factor is safe and can be used for febrile neutropenia for short duration in pregnancy according literature [11,12]. Leukemia patients present with Thrombocytopenia, required platelet count for normal vaginal delivery (30,000/cumm) and cesarean delivery (50,000/cumm) according to literature [13,14].

Post delivery we have to consider for breast feeding, future fertility and reproductive health of these patients [15]. In most of patients breast feeding not advised during chemotherapy, as these agents secreted in milk. If breast feeding is essential, minimum 2

weeks is essential after chemotherapy to prevent adverse effect in baby [16]. Women in reproductive age group atleast she as to give 3 years spacing after completion of chemotherapy for future pregnancy [17]. Multidisciplinary approach is essential for optimizing and better maternal and fetal outcomes.

Conclusion

Spontaneous tumor lysis syndrome in the third trimester of pregnancy is exceedingly rare presentation and represents a life-threatening emergency. High index of suspicion, early laboratory evaluation, and prompt aggressive management are critical for both maternal and fetal survival. This case highlights the importance of early recognition and multidisciplinary approach to reduce maternal and fetal morbidity and mortality.

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