AFRICAN JOURNAL OF FETOMATERNAL MEDICINE

Case Report

Acute Myeloid Leukaemia in Pregnancy: A Case Report

Rabiat Ahmed Musa[1], Bilal Sulaiman[1], Therasa Otu[2], Godswill Ejikeme[2], Josephine Oyije Ameh[2], Hezekiah Isa[2], Aliyu Yabagi Isa[2]

[1]Department of Obstetrics and Gynaecology, University of Abuja/ University of Abuja Teaching Hospital. [2]Department of Haematology, University of Abuja/University of Abuja Teaching Teaching Hospital, Abuja

Abstract

Acute myeloid leukaemia (AML) during pregnancy is a rare and challenging condition that necessitates a delicate balance between maternal health and fetal well-being. This case report discusses a 32-year-old gravida 5 para 4 woman who presented at 12 weeks' gestation with joint pains and was subsequently diagnosed with AML. Initial management was delayed due to cultural beliefs. Upon consent, she received the COAP regimen (Cyclophosphamide, Vincristine, Cytarabine, and Prednisolone) during the second trimester. Despite a satisfactory fetal outcome, the patient had sudden postpartum deterioration and maternal mortality. This case underscores the complexities of managing AML in pregnancy, emphasizing the importance of timely diagnosis, cultural sensitivity, and multidisciplinary care.

Keywords: Acute Myeloid Leukaemia, Pregnancy, Chemotherapy, Maternal Mortality, Fetal Outcome

Correspondence:
Rabiat Ahmed MusaDepartment of Obstetrics and Gynaecology, University of Abuja/ University of Abuja Teaching Hospital.
+2348160056766

INTRODUCTION

Maternal health remains a central focus of global health initiatives, particularly in regions where healthcare resources are limited and systemic challenges are profound. The occurrence of haematological malignancies during pregnancy, although rare, presents a uniquely complex clinical scenario that demands careful consideration from both medical and ethical standpoints. Among these malignancies, leukaemia in pregnancy is an uncommon but critical condition, estimated to affect approximately 1 in 75,000 to 100,000 pregnancies.[1] The majority of these cases are acute leukaemias, with acute myeloid leukaemia (AML) accounting for nearly two-thirds, and acute lymphoblastic leukaemia comprising the remaining third.[1-3]

AML is an aggressive and rapidly progressing malignancy of the myeloid cell line, and its occurrence during pregnancy adds significant complexity to an already high-stakes situation. The physiological changes of pregnancy can obscure the typical presenting symptoms of AML, such as anaemia, thrombocytopenia, and fatigue—symptoms that are already prevalent in many pregnant women, especially in resource-limited settings like Nigeria. This diagnostic ambiguity can delay recognition and treatment, adversely affecting both maternal and fetal outcomes.

Treatment of AML in pregnancy is further complicated by the potential teratogenicity and myelotoxicity of chemotherapeutic agents. Decisions regarding the initiation and timing of chemotherapy are fraught with ethical dilemmas, as clinicians must balance the urgency of maternal treatment against the potential risks to fetal development. In low-resource settings, these decisions are further compounded by cultural expectations, limited access to advanced supportive care, and constraints in diagnostic and treatment infrastructure.

Notably, there is a paucity of documented cases of AML in pregnancy from Nigeria, with

only a single published report found in the literature.[4] This underscores both the rarity of the condition and the potential under reporting perhaps due to diagnostic challenges. In this case report, we present the clinical course of a pregnant woman diagnosed with AML at a tertiary health facility in Nigeria. Through this report, we aim to highlight not only the medical and therapeutic considerations involved in such a case, but also the broader ethical, cultural, and systemic factors that influence care in a resource-constrained environment. The case was managed through a multidisciplinary approach, with constant efforts to strike a delicate balance between ensuring maternal survival and safeguarding fetal well-being.

CASE PRESENTATION

A 32-year-old woman, gravida 5 para 4 (all alive), presented to the gynaecological emergency unit at 12 weeks' gestation with a primary complaint of generalised joint pains lasting five days. She was uncertain of her last menstrual period and reported no associated symptoms such as fever, headache, or gastrointestinal disturbances. Notably, she had been admitted to a peripheral clinic two weeks earlier, where she received two units of blood transfusion due to symptomatic anaemia.

On presentation, the patient appeared pale with a pulse rate of 100 beats per minute and blood pressure of 130/50 mmHg. Abdominal examination revealed a uterus consistent with 12 weeks' gestation. Urgent full blood count revealed marked pancytopenia: white blood cell count was 19.2×10^9/L with lymphocytes at 76.5% and neutrophils at 12.9%; red blood cell count was 2.22×10^{12}/L, hemoglobin level was 7.3 g/dL, hematocrit was 22%, and platelet count was 73×10^9/L. Obstetric ultrasonography confirmed a viable singleton intrauterine pregnancy corresponding to 12 weeks and 1 day gestation. Bone marrow aspiration and biopsy revealed markedly increased myelopoiesis with 80% myeloblasts and monoblasts, consistent with a diagnosis of acute myeloid leukaemia (AML). Erythropoiesis was significantly suppressed with evidence of megaloblastic changes, and megakaryopoiesis was moderately suppressed.

Following confirmation of AML, the patient was counselled regarding the diagnosis, prognosis, and management options, including the recommendation for termination of pregnancy to enable prompt initiation of cytotoxic chemotherapy. However, she declined both termination and chemotherapy at that time, citing religious belief, and instead opted to pursue traditional treatment modalities despite medical advice. Two weeks later, the patient returned to the hospital and provided informed consent for chemotherapy. She was admitted and optimized for treatment. Induction chemotherapy was commenced using the COAP regimen (Cyclophosphamide, Vincristine, Cytarabine, and Prednisolone). Fetal well-being was monitored biweekly via obstetric ultrasonography, while maternal liver and renal function tests remained within normal limits throughout the treatment period.

She received a total of four courses of chemotherapy during pregnancy, alongside supportive care including transfusion of seven units of packed red cells and four units of fresh frozen plasma. At 34 weeks' gestation, she delivered a live female infant weighing 2.9kg, with Apgar scores of 7 and 9 at the first and fifth minutes, respectively. The delivery was complicated by primary postpartum haemorrhage due to uterine atony, which was effectively managed using standard obstetric protocols.

During the early postpartum period, while recovering from her fourth cycle of chemotherapy, the patient began to experience sudden-onset weakness, restlessness, and palpitations on the fifth day after delivery. Despite prompt and aggressive resuscitative efforts, her condition deteriorated rapidly, and she was declared clinically dead within 30 minutes of onset of symptoms. The exact cause of death could not be determined because the family declined postmortem examination.

DISCUSSION

Acute myeloid leukaemia (AML) is a rare haematologic malignancy in pregnancy, accounting for two-thirds of gestational leukaemias.[1] While solid tumours are more commonly encountered during pregnancy, haematological malignancies such as AML pose unique diagnostic and therapeutic challenges due to overlapping clinical features with normal pregnancy and concerns regarding fetal safety.[3,5,6]

AML is characterised by clonal proliferation of immature myeloid cells, leading to bone marrow failure and systemic complications. Globally, its incidence is rising, particularly in developed countries, while data from Africa remain limited.[7] In Nigeria, the exact prevalence is unknown, but AML is reported to constitute 19–24% of hospital-managed leukaemia cases.[7] Most gestational AML cases present in the second or third trimester, making this first-trimester diagnosis unusual.[8]

Diagnosis in pregnancy can be delayed due to symptom overlap with common antenatal conditions such as anaemia and fatigue.[9] In this case, initial misdiagnosis was suspected due to regional prevalence of malaria and sickle cell disease. The eventual discovery of circulating blasts prompted bone marrow evaluation, which confirmed AML by WHO criteria.[11] Treatment planning in pregnancy depends on gestational age. Current guidelines, such as those from the British Committee for Standards in Haematology (2015),

recommend pregnancy termination in the first trimester due to the high teratogenic risk of chemotherapy.[10] However, our patient declined termination and initial treatment, influenced by religious and cultural beliefs, highlighting the ethical and social complexities that frequently affect care decisions in resource-limited settings.

Chemotherapy was eventually initiated in the second trimester using the COAP regimen (cyclophosphamide, vincristine, cytarabine, and prednisolone). While anthracyclines and cytarabine are considered safer in later trimesters, chemotherapy still carries risks of fetal growth restriction, preterm birth, and neonatal myelosuppression.[12,13] In our case, the fetus tolerated treatment well, and no gross abnormalities were noted. Delivery at 34 weeks was followed by a brief postpartum period of stability before sudden maternal deterioration and death. The cause remains uncertain, though postpartum immunosuppression, chemotherapy-related toxicity, or leukemic complications are possible. This tragic outcome underscores the high maternal risk despite aggressive multidisciplinary management and highlights the urgent need for better supportive care capacity in similar settings.

This case emphasises the importance of early diagnosis, timely referral, and context-sensitive counselling in managing AML during pregnancy. It also reflects the delicate balance between respecting patient autonomy and ensuring maternal-fetal safety in a culturally diverse and resource-constrained environment.

CONCLUSION

Acute myeloid leukaemia in pregnancy remains a rare but life-threatening condition that demands prompt diagnosis, individualised treatment, and multidisciplinary care. This case underscores the complexities of managing AML during pregnancy in a resource-limited setting, where delayed presentation, cultural beliefs, and limited access to supportive care can significantly impact outcomes. Despite a successful fetal outcome following chemotherapy in the second and third trimesters, the maternal mortality in the postpartum period highlights the critical need for enhanced maternal monitoring and robust supportive systems. Early recognition, context-sensitive counselling, and timely intervention remain key to improving both maternal and fetal survival in similar cases.

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