



A CASE OF CHRONIC MYELOID LEUKAEMIA DIAGNOSED AND MANAGED IN THE THIRD TRIMESTER OF PREGNANCY: MULTIDISCIPLINARY SUCCESS

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Abstract

Background: The coexistence of Chronic Myeloid Leukaemia (CML) and pregnancy is rare, posing significant diagnostic and therapeutic challenges. Management requires balancing maternal disease control against fetal safety, particularly in relation to Tyrosine Kinase Inhibitors (TKIs).

Case: A 26-year-old primigravida presented at 28 weeks of gestation with fatigue and abdominal fullness. She had a known diagnosis of CML for two years prior to conception and was receiving TKI therapy. Upon confirmation of pregnancy, TKI therapy was discontinued and she was switched to interferon-alpha once weekly. During the third trimester, investigations revealed marked leucocytosis and thrombocytosis, with evidence of active disease. Bone marrow biopsy and cytogenetics confirmed CML in chronic phase (Philadelphia chromosome positive). A multidisciplinary team comprising obstetrics, haematology, and neonatology managed the case. Due to rising counts and symptom burden, imatinib therapy was reintroduced at 30 weeks after extensive counselling. The pregnancy was closely monitored with serial growth scans and Doppler studies. An elective lower segment caesarean section was performed at 37 weeks, delivering a live male infant weighing 2.8 kg with normal Apgar scores. The neonate showed no immediate abnormalities. The mother achieved haematological remission by 12 weeks postpartum.

Conclusion: With meticulous multidisciplinary planning, careful timing of TKI re-initiation in late pregnancy, and coordinated delivery planning, successful maternal and neonatal outcomes are achievable in pregnancies complicated by CM.

Keywords: Chronic Myeloid Leukaemia, Pregnancy, Tyrosine Kinase Inhibitors, Imatinib, Interferon-alpha, Multidisciplinary Team, Thrombocytosis.

Introduction

Chronic Myeloid Leukaemia (CML) accounts for 15–20% of adult leukaemias but is rarely encountered during pregnancy, with an estimated incidence of approximately 1 in 100,000 pregnancies. Many patients are now diagnosed at a younger age and may conceive while on long-term TKI therapy. TKIs are associated with teratogenic risk, particularly during the first trimester, necessitating alternative strategies such as interferon-alpha. We report a case of a woman with pre-existing CML who conceived while on TKI therapy and was successfully managed through pregnancy with a favourable maternal and fetal outcome.

Case Report

A 26-year-old primigravida, known case of Chronic Myeloid Leukaemia for two years, presented at 28 weeks of gestation with a three-week history of progressive fatigue, early satiety, and abdominal fullness. Prior to pregnancy, she had been on regular TKI therapy with good disease control. On confirmation of pregnancy, TKI therapy was immediately discontinued and she was commenced on interferon-alpha administered once weekly.

Despite interferon therapy, she developed progressive leukocytosis and splenomegaly in the third trimester, prompting referral to a tertiary care centre.

On examination, she was pale with a palpable spleen 8 cm below the left costal margin. Obstetric examination was otherwise normal.

Investigations:

- Haemoglobin: 9.2 g/dL
- White Cell Count: $120 \times 10^9/L$
- Platelets: $650 \times 10^9/L$
- Peripheral smear: Leucoerythroblastic picture with basophilia
- Bone marrow biopsy: Hypercellular marrow with granulocytic hyperplasia
- Cytogenetics (FISH/PCR): Philadelphia chromosome positive (BCR-ABL1), confirming CML in chronic phase

Table 1: Timeline of Key Clinical Events and Management Decisions

Gestational Age	Event/Investigation	Action/Outcome
Pre-pregnancy	Known CML on TKI therapy	Disease controlled
Early pregnancy	Pregnancy confirmed	TKI stopped, interferon-alpha started
28 weeks	Presentation with splenomegaly and leukocytosis	Admitted for workup
30 weeks	Rising counts despite interferon	Imatinib reintroduced after counselling
37 weeks	Elective LSCS	Live male infant, 2.8 kg
Postpartum	Continued imatinib	Major molecular response at 12 weeks

Table 2: Key Haematological Parameters

Parameter	At Diagnosis	32 weeks	At Delivery	12 Weeks Postpartum
Hb (g/dL)	9.2	10.1	10.8	12.5
WBC ($\times 10^9/L$)	120	45	12.5	6.8
Platelets ($\times 10^9/L$)	650	420	280	220

Table 3: Management Options for CML in Pregnancy

Trimester	Preferred Management	Key Considerations
First	Interferon-alpha, leukapheresis	Avoid TKIs due to teratogenicity
Second	Interferon-alpha or cautious TKI use	Close fetal monitoring
Third	TKI therapy if needed	Plan delivery, monitor growth
Postpartum	Full-dose TKI	Avoid breastfeeding

Conclusion

The concomitant management of CML and pregnancy is complex but feasible. A patient-centric, multidisciplinary approach is paramount. This case demonstrates that the initiation of imatinib in the late second or early third trimester, combined with intensive fetal-maternal surveillance, can lead to the successful control of maternal CML and the delivery of a healthy term infant. Long-term follow-up of children exposed to TKIs in utero remains essential.

References

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Patient Consent:

Informed written consent was obtained from the patient for the publication of this case report.

Conflict of Interest:

The authors declare no conflicts of interest.