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Management of chronic myeloid leukemia (CML) in pregnant women: A comprehensive literature review

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BACKGROUND - AIM

Background

The occurrence of chronic myeloid leukemia (CML) during pregnancy poses a complex presentation, encompassing risks to both the maternal host and the developing fetus, resulting from the disease process and its therapeutic interventions.

The management of this dual concern entails a contentious approach, compounded by inconclusive outcomes from preceding studies.

Aim

The aim of this review is to synthesize a robust framework for an optimal approach to addressing CML in the context of pregnancy.

METHODS

Inclusion criteria

- Peer reviewed journals (Journal of Hematology and Oncology, Leukemia and Lymphoma journal),
- Clinical trials.
- Case reports.
- Expert opinions.

Exclusion criteria

- Studies concentrating solely on the fertility implications of tyrosine kinase inhibitor (TKI) treatment in pre-pregnant women.
- Studies restricted to evaluating pregnancy outcomes exclusively in male patients subjected to TKI therapy.

RESULTS

Teratogenicity of TKIs

Previous studies advised against TKI use before 15 weeks

Imatinib

Congenital risks during organogenesis, particularly involving skeletal and cardiovascular abnormalities (1).

Dasatinib

Not recommended during both early and late pregnancy (2).

Bosutinib

Have the highest rate of passive placental transfer (3).

Ponatinib- Asciminib

Limited data on their use in pregnant women.

Benefits of TKIs

- Recent research indicates potential benefits of using TKIs after organogenesis. The largest study presented at the ELN about TKI safety during pregnancy noted only four congenital abnormalities (4).
- TKI discontinuation remains recommended if MMR achieved.
- The decision to stop TKI treatment involves continuous monitoring factors like relapse and recurrence.

Alternative treatment options

Leukapheresis

- Limited to reducing white blood cell count temporarily (5).
- This treatment was studied without any adverse effects.

Hydroxyurea

- Used in the phase of leukocytosis, thrombocytosis and systemics symptoms.
- Associated with rare teratogenic effect and preeclampsia (6).

IFN-α

- Remains the safest therapeutic option (7).
- Its effectiveness be limited by the slow response time.

Decision-making involves balancing between discontinuing treatment, leading to potential complications from CML, and continuing TKIs or alternative treatment, which may result in some fetal malformations.

CONCLUSIONS

While potent treatments like TKIs are essential, their adverse effects complicate their use in pregnant individuals.

The use of TKIs and other possible treatments of CML during pregnancy has its own accepted indications and limitations. This review of literature aids hematologic oncologists in managing CML during pregnancy.

REFERENCES

1.Pye SM, Cortes J, Ault P, et al. The effects of imatinib on pregnancy outcome. Blood 2008;111:5505-8

2.Cortes JE, Abruzzese E, Chelysheva E, et al. The impact of dasatinib on pregnancy outcomes. Am J Hematol 2015;90:1111-5.

3.Chelysheva E, Turkina A, Polushkina E, et al. Placental transfer of tyrosine kinase inhibitors used for chronic myeloid leukemia treatment. Leuk Lymphoma 2018;59:733-8.

4.Chelysheva E, Turkina A, Rea D, et al. S881 Pregnancy outcome in female patients with chronic myeloid leukemia worldwide: analysis of 305 cases of the European Leukemia Net Registry. HemaSphere 2019;3:395

5.Staley EM, Simmons SC, Feldman AZ, et al. Management of chronic myeloid leukemia in the setting of pregnancy: when is leukocytapheresis appropriate? A case report and review of the literature. Transfusion 2018;58:456-60.

6.Thauvin-Robinet C, Maingueneau C, Robert E, et al. Exposure to hydroxyurea during pregnancy: a case series. Leukemia 2001;15:1309-11.

7.Castillo DR, Park D, Mehta A, et al. Outcomes of the Pregnancies with Chronic Myeloid Leukemia in the Tyrosine Kinase Inhibitor Era and Literature Review. Hematol Rep 2022;14:45-53

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ETHICAL STATEMENT

The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.