soho2023
ELEVENTH ANNUAL MEETING

Effect of Tyrosine Kinase Inhibitors on Sperm Parameter and Pituitary-Gonadal Axis in Males with Chronic Myeloid Leukemia (CML)

AuthorsNeha Ganju1,2, Tulika Seth MD1, Rishi Dhawan1, Mona Sharma1, Manoranjan Mahapatra1, Pradeep Chaturvedi1
1 AIIMS, New Delhi, India. 2 Ganju Hematology Clinic and Hospital, Nagpur, India

INTRODUCTION

- CML occurs most commonly in the 4th decade of life when reproductive functions are important biological functions.
- With the significant improvement in the quality of life with TKI, there is an increased necessity to address the issue of fertility.
- There are very few human studies on the effects TKI on reproductive health of male CML patients.
- Therefore, this work was planned to study the drug effects on male seminal parameters and pituitary hormones post-treatment.

AIM

- To evaluate semen parameters before and three months after starting TKIs.
- The secondary objective was to evaluate pituitary-gonadal function before and three months after starting TKIs.

METHOD

- All male patients 18 to 60 years of age with clinical suspicion of CML
- Baseline hormone tests like FSH, LH, Testosterone, along with sperm parameters, were done.
- Semen analysis was done according to WHO criteria 2010. Semen samples were collected and processed for all parameters, including count, morphology, motility, and Vitality.
- All patients were started on Imatinib, the first generation TKI, after a confirmatory BCR ABL test (PCR).
- After three months of therapy, they were again tested for hormones and semen parameters.
- SPSS v23 (IBM Corp.) was used for data analysis.

RESULTS

- A total of 30 patients were included
- The mean age was 32.60 ± 9.56.
- Amongst 30 patients, 22 had decrease in sperm count from baseline although 5(16.6%) had oligospermia (<15million/ml) and none had severe oligospermia (<5million/ml).
- Progressive motility decreased in 11 out of 30 patients, but 6 (20%) had decrease in motility below reference range of 32% which might lead to infertility.
- Vitality decreased in 13 of 30 patients, but 10 (33.3%) had decrease in vitality below reference range of 58%. In 16 out of 30 patients there was decrease in morphologically normal sperms but 2(6.66%) had <4% morphologically normal sperms which might cause infertility.
- Testosterone level was normal in all subjects before and after treatment. None of the patients had low FSH or LH.
- Our study found a decrease in mean FSH, LH, Testosterone levels and sperm count, sperm concentration, non-progressive motility, immotility, normal morphology were reduced after Imatinib therapy, but this change was not statistically significant

Parameters	DECREASE	ABNORMALITY LIKELY TO CAUSE INFERTILITY
Sperm concentration	22/30(73.3%)	5/22(22.7%)
Progressive motility	11/30(36.6%)	6/11(54.5%)
Total motility	13/30(43.3%)	5/13(38.46%)
vitality	13/30(43.3%)	10/13(76.92%)
Normal morphology	16/30(53.3%)	2/16(12.5%)

CONCLUSIONS

- We could not find any significant correlation between abnormal hormone values and sperm parameters.
- Patients who wish to start their family should be counseled regarding paucity of data and given the option for sperm preservation before starting Imatinib.
- Drawbacks include a smaller number of patients, other TKI that could not be checked, and shorter follow-up.

REFERENCES

Yassin M, Soliman A, Sanctis V. Effects of tyrosine kinase inhibitors on spermatogenesis and pituitary gonadal axis in males with chronic myeloid leukemia. J Cancer Res Ther. 2014 Aug 1;2:116–21.

Chang X, Zhou L, Chen X, Xu B, Cheng Y, Sun S, et al. Impact of Imatinib on the Fertility of Male Patients with Chronic Myelogenous Leukaemia in the Chronic Phase. Target Oncol. 2017 Dec 1;12(6):827–32.

Pye SM, Cortes J, Ault P, Hatfield A, Kantarjian H, Pilot R, et al. The effects of Imatinib on pregnancy outcome. Blood. 2008 Jun 15;111(12):5505–8

ACKNOWLEDGEMENTS

The authors would like to thank the patients, their families, and their caregivers; the study investigators and their team members at each study site; and colleag The authors would like to thank the patients, their families, and their caregivers.

CONTACT INFORMATION

nehaganju@gmail.com