

INTRODUCTION

Over 70% of non-small cell lung cancer (NSCLC) patients undergoing chemoradiation experience radiation-induced haematologic toxicities, including lymphopenia, neutropenia, and anaemia [1].

To guide prevention strategies, we aimed to quantify peripheral blood count changes during volumetric modulated arc therapy (VMAT).

METHODS

We retrospectively analysed:

- 670 absolute lymphocyte counts (ALC)
 - 674 absolute neutrophil counts (ANC)
 - 675 haemoglobin levels (Hb)
- in 93 NSCLC patients (2018-2024).

Patients received radiation doses between 50-60 Gy, delivered in 2-2.75 Gy per fraction, with concurrent platinum-based chemotherapy.

Blood dynamics were modelled using stochastic simulations (HEDOS) [2], incorporating temporally accumulated VMAT doses (BeamSplitter) [3].

The primary endpoint was the characterisation of dose-response relationships.

DISCUSSION AND CONCLUSION

Haematologic side effects were frequent and correlated with the radiation dose received by circulating blood during VMAT chemoradiation of NSCLC.

Future work will investigate strategies at the treatment planning stage to reduce the dose to circulating blood cells.

REFERENCES & ACKNOWLEDGEMENTS

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In compliance with ACCME guidelines, the authors disclose that Claude Sonnet 4 was used for line-by-line language editing, grammar correction, and syntax clarity.

RESULTS

