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Title: Feasibility of Introducing Hippocampal-Avoidance Radiotherapy for Head and Neck Cancers – A Single Institution Experience

Body: Background
Hippocampal avoidance (HA) has been used in whole brain radiotherapy planning to preserve cognitive function (1). Hippocampal dose is not standardly optimised in patients with head and neck cancer (HNC), but has been previously reported (2). We aim to assess feasibility of implementing HA for HNC patients.
Methods
We retrospectively reviewed 8 patients with HNC who received adjuvant radiotherapy at our institute using volumetric modulated arc therapy (VMAT). Bilateral hippocampi were delineated on the original dataset, while the contours for previous target volumes and Organs at Risk (OARs) were kept unchanged. The dose volume constraints (DVCs) for the hippocampi were D100% ≤500cGy, D0.03cc ≤1600cGy, and Dmean <900cGy.
Results
Eight patients were reviewed (1 sinonasal, 1 salivary gland, 6 cutaneous). Median prescription dose was 64Gy (range 60-66 Gy) in 30 fractions. Initial radiotherapy plans were created without HA optimisation. When Hippocampi were retrospectively drawn, all patients (8/8) failed to meet DVCs. Each plan was re-optimised using HA, allowing constraints to be successfully met, while maintaining planning target volume coverage. Significant changes in modulation degree or estimated delivery time were not identified.
Conclusion
This limited planning study indicates it is feasible to implement HA for HNC radiotherapy planning.

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