Radiation Therapy of Sinonasal Cancer

The problem

Sinonasal malignancies encompass tumors originated from the nasal cavity or the paranasal sinuses. Radiotherapy is a cornerstone in the sufficient treatment of sinonasal cancer, but important structures in close proximity to the tumor poses a challenge for the treatment. Radiation of normal tissue might cause permanent late toxicity in the eyes/optic pathway, pituitary gland, brain and nose. Proton therapy may spare normal tissue and thus reduce late morbidity.

Aim

To investigate different aspects of radiotherapy in the treatment of sinonasal cancer, with the perspective of being able to plan and strategize the treatment better in the future, and be able to select the patients who would benefit from proton therapy as opposed to the standardized x-ray based treatment.

Research Plan

Study 1: Pattern of failure in IMRT for Sinonasal Carcinomas

Retrospective analysis of patients with sinonasal cancer treated with radiation therapy. A correlation between the location of the recurrence and the dose distribution will be investigated.

Study 2: Cross sectional study of late toxicity after intensity-modulated radiotherapy.

A cross sectional study of patients previously treated with IMRT for sinonasal cancer, investigating late toxicity of the optic pathway, brain, pituitary gland or nose. Dose-response correlations will be investigated.

Study 3: Fluid changes during radiation therapy for sinonasal carcinoma

Cone beam CT scans will be assessed, and the influence on dose distribution in both photon- and proton therapy will be established.

Study 4: DAHANCA 36a: A prospective toxicity registration.

A national study prospective registration of acute and late morbidity after treatment for sinonasal cancer, either surgery alone, surgery and radiotherapy in combination or radiotherapy alone.

Perspective

The results from the project will generate the foundation of a selection strategy for sinonasal cancer. Furthermore, the occurrence of late toxicity may have increased focus in the clinical setting with both increased identification and treatment of radiation-related conditions diagnosed in the follow-up period.