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PTCOG 48 - 48th Particle Therapy Co-Operative Group Meeting

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**Printed version****Proton Therapy of Nasal Cavity and Paranasal Sinus Tumors: The UFPTI Experience**

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**Introduction:**

Since January of 2007, twenty-six patients with tumors of the nasal cavity and paranasal sinuses with skull base extension have completed treatment with proton therapy at UFPTI. The disease characteristics, treatment planning and delivery techniques, and initial follow-up results are presented.

**Methods:**

Of the twenty-six patients, twenty-three had prior surgery, twelve with positive margins. Three patients had biopsy only. Histology included poorly differentiated carcinoma, sino-nasal undifferentiated carcinoma, adenocarcinoma, adenoid cystic carcinoma, esthesioneuroblastoma and mucosal melanoma. Proton treatment targets and critical structures were delineated from co-registered simulation CT images and diagnostic MR images. The geometric relations between target volumes and critical structures were examined to select optimal proton beam parameters. Proton-specific through- and patch-fields, as well as match fields were used for these patients to achieve target-conforming and critical organ-sparing concave dose distributions. Prescribed dose ranges from 69.6 CGE to 74.4 CGE, was delivered at 1.2 CGE per fraction, two fractions per day. Treatments were delivered with orthogonal kV x-ray imaging guidance, to achieve 1 mm setup accuracy, for each fraction.

**Results:**

Patient follow-ups ranged from 1 to 23 months, with a mean of 10.4 months. All patients tolerated the treatment well. All patients developed brisk skin reactions that resolved within 4 weeks after completion of treatment. Follow-up imaging studies and biopsy revealed in-field recurrent disease in two patients at 9 and 10 months, progressive meningeal seeding in one patient within two months after completion and distant visceral and bony metastasis in three patients between 6 and 12 months after completion. Medial retinopathy occurred within the treated volume in one patient at 11 months after completion of treatment without negative impact on visual acuity.

**Conclusion:**

Our experience suggests that patients with tumors involving the skull base will benefit from high-dose conformal proton therapy treatments.