The Retrospective Comparison Study of Concurrent Chemoradiotherapy using Gemcitabine Versus Platinum in Locally Advanced Unresectable Squamous Cell Carcinoma of The Head and Neck

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**Background:** Concurrent chemoradiation is an effective treatment of locally advanced (LA), unresectable squamous cell carcinoma of the head and neck (SCCHN). Platinum-based chemotherapy is standard of care albeit its significant toxicity including renal toxicity and the need for hospitalization. Gemcitabine is a strong radiosensitization agent but has not been adequately tested in this setting. High response rates have been reported in phase II studies using gemcitabine concomitantly with radiation (RT). This study was initiated to retrospectively compare the efficacy and toxicities of gemcitabine-based to platinum-based concurrent chemoradiation (CCRT) in LA-SCCHN.

**Method:** Patients (pts) with newly diagnosed LA SCCHN and adequate organ function who received concurrent chemoradiation were eligible for review. RT was given at 65-70 Gy over 6.5-7 weeks concurrently with either weekly gemcitabine (experimental arm) at 4 different dose levels or platinum-based (single agent cisplatin, carboplatin, or combination platinum chemotherapy, control arm).

**Results:** There were 96 pts eligible and consisted of 68 pts in platinum-based regimen and 28 pts receiving gemcitabine. After median follow-up of 32 months, the median overall survival in gemcitabine group was 20 months compared to 15 months in platinum-based group (adjusted hazard ratio [HR] 0.79, P=0.18). Progression free survival (PFS) was significantly longer with gemcitabine (adjusted HR, 0.48; P=0.02). Overall response rate was 82% in gemcitabine cohort and 85% in platinum cohort (P=0.49). Both treatments were well tolerated, with more neutropenia, anemia, skin and mucosal toxicities in gemcitabine arm. The majority were of grade 1-2 in severity except for mucositis.

**Conclusion:** Concurrent chemoradiation with gemcitabine has comparable efficacy as platinum-based treatment with moderate but manageable treatment-related toxicities.