

Results: Repeated surgery never achieved a definitive cure, and a temporary biochemical remission (5 months) occurred only in 1 case. Initial surgery significant reduced calcemia ($36 \pm 5.9\%$) and PTH levels ($79.7 \pm 13.5\%$, $p < 0.05$), although all patients persisted or recurred. In case of repeated surgery, the first and second reoperations significantly reduced serum calcium ($22.4 \pm 6\%$ and $13.7 \pm 3\%$, respectively) and PTH levels ($80.5 \pm 6\%$ and $69 \pm 7\%$, respectively; $p < 0.05$), but the reduction became not statistically significant ($P = NS$) after the second reoperation. The first reoperation was less effective in reducing the serum calcium levels than initial surgery ($p = 0.005$), while no differences were found for PTH levels ($p = 0.91$). The second reoperations were progressively less effective in reducing both calcemia and PTH levels ($p = 0.03$ and 0.04 , respectively), while no difference were found between further operations.

Conclusions: Repeated surgery is effective to achieve significant biochemical palliation; although it is never followed by definitive cure. Initial surgery achieve the best results, because reoperations became progressively less effective. For these reasons, in case of recurrent PC, the use of other adjuvant treatment (calcimimetic agents) should be considered in addition to repeated surgery.

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POSTER

The treatment result of hypopharyngeal cancer

Y. Chen^{1,2}, F. Chang^{1,2}, J.T. Chang^{1,2}, H. Wang^{1,2}, C. Liao^{2,3}. ¹Chang Gung Memorial Hospital, Radiation Oncology, Taoyuan, Taiwan; ²Chang Gung Memorial Hospital, Medical Oncology, Taoyuan, Taiwan; ³Chang Gung Memorial Hospital, ENT, Taoyuan, Taiwan

Introduction: To evaluate the treatment result of hypopharyngeal cancer and find the prognostic factors.

Material and Patients: There were 430 hypopharyngeal cancer received treatment in Chang Gung Memorial Hospital from January 1994 to May 2004. Four hundred and seventeen (96%) patients are male and the median age is 56 ranging from 15 to 87. The majority (88%) of patients had habits of smoking, 73% of patients alcohol drinking and 51% of patients had betel quid chewing. The stage distribution is stage I: 4(0.9%), stage II: 20(4.7%), stage III: 57(13.3%) and stage IV: 349(81.2%). Thirty five patients refused radical treatment so there were 395 patients entering analysis. Eight one (20.5%) patients received radical surgery and the others (79.5%) received organ preservation treatment.

In organ preservation patients, 46 patients received radiotherapy alone; 156 patients received chemotherapy then radiotherapy and 112 patients received concomitant chemoradiotherapy.

Result: The 5-year disease specific survival for stage I, II, III and IV were 67%, 74%, 44% and 20% respectively ($p = 0.000$). Patients received radical surgery first or organ preservation treatment did not have significant difference in disease specific survival. The 5-year survival for radical surgery and organ preservation are 31% and 34% respectively. Patients who received concomitant chemoradiotherapy had 61% of chance for organ preservation but only 52% for those patients who received induction chemotherapy.

Discussion: The majority of hypopharyngeal cancer is stage IV disease. There was no survival difference between organ preservation and radical surgery. It may hint that organ preservation may be considered for hypopharyngeal cancer patients.

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POSTER

Management of medullary thyroid carcinoma

S. Subramanian, V. Brzhezovskiy, V. Lyubaev, G. Kochurina. N.N. Blokhin Russian Cancer Research Center, Department of Head & Neck Surgery, Moscow, Russian Federation

Aim: To establish the optimal treatment modality for Medullary thyroid carcinoma.

Material and Methods: 182 patients have been treated for Medullary Thyroid Carcinoma at the NNBRCC. 142 out of them were followed-up for 5 years and more. As per the TNM the patients had the following stages of disease: T₁N₀M₀ – 7, T₂N₀M₀ – 13, T₃N₀M₀ – 19, T₀N₁M₀ – 4, T₁N₁M₀ – 11, T₂N₁M₀ – 13, T₂N₁M₁ – 2, T₃N₁M₀ – 47, T₃N₁M₁ – 20, T₄N₁M₀ – 9, T₄N₁M₁ – 19, T₃₋₄N₁M₁ – 8.

The results of treatment of patients with regional metastases were analyzed. 69 patients underwent surgical treatment. Combined treatment including surgery + pre- or post-operative radiotherapy of 40 to 70 Gy was administered to 65 patients. Palliative radiotherapy was administered in 36 patients having inoperable disease. Chemotherapy was administered in 18 patients. Chemotherapy included different combinations of adriablastin, bleomycin, cyclophosphamide and cisplatin. At least two cycles of treatment was given to each patient.

Results: In the group of patients who underwent surgery alone, 60.9% are alive for five or more years; combined treatment with preoperative

radiotherapy – 61.5%; combined treatment with postoperative radiotherapy – 57.7%. The difference between these figures are statistically non-significant. In the group of patients who were border-line operable, this figure was 28.2%. Palliative effect was attained in 11% cases. Only one patient responded to chemotherapy.

Conclusions: Surgery is still the main modality of treatment of medullary thyroid cancer. Radiotherapy has restricted indications namely border-line operable cases – established microscopically or macroscopically or palliative and symptomatic treatment of inoperable forms of tumor spread like bone metastases. Chemotherapy is so far a tertiary option and new drugs and/or new combinations are needed to be tested.

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POSTER

Effect of zinc on improving mucositis and dermatitis caused by radiotherapy of head and neck cancer – results of randomized study

L. Li-Ching, L. Henry W.C., Q. Jenny, L. Li-Kuei, L. Fong-Chia. Chi-Mei Foundation Medical Center, Radiation Oncology, Yung Kang City, Tainan, Taiwan

Purpose: Zinc is known to be very important in the context of metabolic response to injury and wound healing. If zinc can improve the healing of mucositis and dermatitis, patients will be more willing to complete the treatment course, and hopefully, the survival rate will increase.

Materials and methods: Oral zinc adopted in this study was Pro-Z, extracted from bovine prostate, containing amino acid chelated zinc. A double-blind, randomized, placebo-controlled study processed from Jan. 2003 to Aug. 2004. Ninety-seven patients with head and neck cancers received radiotherapy and were enrolled in this study. Among them, 49 patients took 3 capsules of Pro-Z per day during the entire course of radiotherapy while the other 48 patients took 3 capsules of placebo per day.

Results: Patients of both groups are similar in gender, age, body weight, pre-treatment serum zinc, pre-treatment serum transferrin. Tumor characteristics such as tumor type, pathology, recurrence and stage are comparable in both groups. About the treatment of both groups, the details are similar also. The patients of placebo arm suffered from grade 2 mucositis and grade 2 dermatitis earlier than those of Pro-Z arm ($p = 0.017$ and 0.014 , respectively). Between patients of those 2 groups, there was also significant difference in the development of grade 3 mucositis ($p = 0.003$) and grade 3 dermatitis ($p = 0.0092$). The mucositis and dermatitis were milder on patients of Pro-Z arm (both $p = 0.003$). Though the milder mucositis and dermatitis, patients of Pro-Z arm were unable to receive more courses of weekly concurrent chemotherapy than those of placebo arm ($p = 0.46$). The weight loss among both groups was similar ($p = 0.44$). The common side effects of zinc, such as gastrointestinal discomfort, did not occur in all the patients.

Conclusion: During the period of radiotherapy, severe mucositis and dermatitis developed later and milder on patients with zinc supplement than on those without zinc. However, the weight loss and courses of weekly concurrent chemoradiotherapy were not different significantly between patients who took Pro-Z and those who didn't. In this randomized study, Pro-Z is promising in the improvement of radiation mucositis and dermatitis. But its impact on treatment results such as local control and overall survival is under further investigated.

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POSTER

Submandibular gland sparing using intensity modulated radiotherapy (IMRT) for head and neck cancer: Effect on the basal saliva flow and clinical symptoms of xerostomia

K. Saarialahti¹, M. Kouri¹, T. Atula², H. Joensuu¹, M. Tenhunen¹. ¹Helsinki University Central Hospital, Department of Oncology, Helsinki, Finland; ²Helsinki University Central Hospital, Department of Head and Neck Surgery, Helsinki, Finland

Background: We evaluated the effect of submandibular gland sparing achieved by intensity modulated radiotherapy (IMRT) on the basal salivary flow rate and the symptoms of xerostomia at 6 and 12 months following completion of radiation therapy for head and neck cancer.

Methods: 35 patients with head and neck cancer were treated with IMRT between July 2000 and April 2004. The mean age at study entry was 53 years (range, 29 to 78), and 17 were male. Patients were required to have normal salivary gland function at study entry. Eight patients had nasopharyngeal and 27 oropharyngeal cancer. Five patients had stage II, 5 stage III, 22 stage IVA, and 3 stage IVB tumor at presentation. Nineteen patients received postoperative RT and 16 definitive chemo-

RT with concurrent cisplatin, either 40 mg/m² once weekly ($n = 9$) or 100 mg/m² ($n = 7$) on days 1, 22 and 42 of the radiation course. All patients received a minimum total dose of 50 Gy with 2 Gy daily fractions to the primary tumor site and the locoregional lymph nodes (PTV1),

following which a booster of 6 to 20Gy was given to the resection site or to the macroscopic tumor with 1 cm margins (PTV2). In all patients the contralateral parotid gland was included in the optimization process as an organ at risk, and in 16 cases also the dose of the contralateral submandibular gland was minimized. The mean total dose to the protected parotid glands was 23.4 Gy (range, 16.2 to 32.2 Gy) and to the submandibular glands 26.3 Gy (range, 21.0 to 34.4 Gy). The total basal and stimulated salivary flow was assessed before RT and at 6 and 12 months following RT. Xerostomia-related symptoms were scored using the SOMA scale.

Table 1.

	Submandibular gland dose Mean	Decline in basal secretion		Subjective xerostomia at 12 mo	
		At 6 mo	At 12 mo	Grade 0–1	Grade 2–4
Group 1 26.3 Gy (n = 16)		36±6%	40±7%	74%	26%
Group 2 50 Gy (n = 19)		64±6%	62±7%	38%	62%
		p < 0.05	p < 0.05		p < 0.05

Conclusion: Sparing of the submandibular glands using IMRT results in significantly better basal salivary secretion and less symptoms of xerostomia. No locoregional recurrences near the spared salivary glands were observed.

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POSTER

Phase II study of concurrent chemoradiotherapy with capecitabine and cisplatin in patients with locally advanced squamous cell carcinoma of the head and neck

J.G. Kim¹, D.H. Kim¹, S.K. Sohn¹, J.H. Baek¹, Y.S. Chae¹, K.B. Lee¹, J.H. Sohn², J.S. Park², J.C. Kim³, I.K. Park³. ¹Kyungpook National University Hospital, Oncology/Hematology, Daegu, Korea; ²Kyungpook National University Hospital, Otorhinolaryngology, Daegu, Korea; ³Kyungpook National University Hospital, Radiation Oncology, Daegu, Korea

Objectives: The objectives of the present study were to evaluate the efficacy and safety of concurrent chemoradiotherapy with capecitabine and cisplatin in patients with locally advanced squamous cell carcinoma of the head and neck (SCCHN).

Patients and methods: Thirty-seven previously untreated, histologically confirmed patients with stage III or IV SCCHN were enrolled into the study. Chemotherapy consisted of two cycles of intravenous cisplatin of 80 mg/m² on day 1 and oral capecitabine 825 mg/m² twice daily from day 1 to 14 in a 3-week interval. Radiotherapy (1.8–2.0 Gy 1 fraction/day to a total dose of 70.2 to 72 Gy) was delivered to the primary tumor site and neck and was targeted to begin on the first day of chemotherapy.

Results: The median age of patients was 61.0 years (range, 35–75 years), and 31 (83.8%) patients were male. Primary sites of tumors were as follows: oral cavity (n=6), oropharynx (n=11), hypopharynx (n=8), larynx (n=3), nasopharynx (n=6), and paranasal sinus (n=3). Thirty-four (91.2%) out of 37 patients completed the planned treatment. After the chemoradiotherapy, 29 complete responses (CR; 78.4%) and 6 partial responses (PR; 16.2%) were confirmed, giving an overall response rate of 94.6%. Grade 3 or 4 neutropenia occurred in only 2 patients (5.4%), and grade 3 febrile neutropenia was observed in 1 patient (2.7%). There was no treatment-related death. The common non-hematological toxicities were mucositis (grade 3/4, 67.6%) and dermatitis (grade 3/4, 24.3%). At a median follow-up duration of 303 days (range, 85–703 days), median survival has not yet been reached, while the estimated overall survival and progression free survival at 1-year was 90.5±5.3% and 59.9±9.1%, respectively.

Conclusions: Concurrent chemoradiotherapy with capecitabine and cisplatin was found to be well-tolerated and effective in patients with locally advanced SCCHN. Long-term follow-up is warranted to evaluate the late treatment failure and complications.

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POSTER

A historical cohort study of Parotid gland malignancies in Manitoba – the Canadian experience

R. Koul¹, R. Nason², J. Butler¹, A. Dubey¹, A. Abdoh³. ¹CancerCare Manitoba, Radiation Oncology, Winnipeg, MB, Canada; ²CancerCare Manitoba, Surgical Oncology, Winnipeg, MB, Canada; ³University of Manitoba, Epidemiology, Winnipeg, MB, Canada

Introduction: Parotid cancer is characterized by a complex and diverse group of tumours with a variable outcome. The objective of this study was to identify significant prognostic factors that can be used in clinical decision making.

Methods: A historical cohort study of 184 patients with parotid gland malignancy registered in the province of Manitoba from 1970 to 2003 was examined. Survival analysis using Kaplan Meier curves and log-rank test for comparing subgroups was used. The independent effect of factors that predicted survival at the bivariate level was determined using a Cox's proportional hazard model.

Results: The mean age at presentation was 60.50±18.2 years with a male to female ratio of 1.5:1. The mean and median follow-up was 64 and 32 months respectively. The most common presentation was a painless mass (n=116). Pain was an associated symptom in 33 and facial nerve involvement was documented in 26 patients. Histology included mucoepidermoid carcinoma (21%), acinic cell carcinoma (18.4%), adenoid cystic (14.6%), adenocarcinoma (11.4%) and other (34.6%). Thirty-four patients had stage I, and 55, 29, and 50 patients Stages III-IV disease respectively. The treatment modalities in 161 patients treated with curative intent included radiotherapy (8.9%), surgery (28.9%), and surgery and radiotherapy (56.7%). Twenty-three patients had persistent disease after treatment. Recurrence was noted in 66 patients: 45 had locoregional disease and 21 failed at distant sites. Absolute and disease specific survival at 5 years was 41.70% and 57.94%. Survival for Stages I to IV at 5 years was 85.35%, 76.9%, 56.1% and 8.4% (P < 0.0001). Factors with an independent effect on survival (P < 0.05) included age, tumor size (per cm), local invasion (T4 vs. T1), distant metastasis, tumour differentiation and treatment. Adjuvant radiotherapy reduced the risk of death from disease at 5 years by 50% (HR 0.5; CI 0.228, 0.995; P = 0.0486).

Conclusion: Despite the diverse variety of malignant parotid tumors there are easily identifiable prognostic indicators, such as advanced age, tumor size, local invasion, and tumor differentiation that have a significant impact on outcome. Patients with adverse prognostic factors benefit from adjuvant radiotherapy and the threshold for the use of adjuvant radiotherapy in managing parotid malignancy should be low.

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POSTER

Parotid scintigraphy as a tool to assess salivary gland dysfunction after radiotherapy in head and neck cancer patients

M. Golen¹, K. Skłodowski¹, A. Wygoda¹, B. Pilecki¹, W. Przeorek¹, W. Sasiadek¹, T. Rutkowski¹, M. Sygula¹, A. d'Amico², Z. Kolosza³. ¹Center of Oncology-Institute MSC MI, I Radiotherapy Clinic, Gliwice, Poland; ²Center of Oncology-Institute MSC MI, Dept. of Nuclear Medicine, Gliwice, Poland; ³Center of Oncology-Institute MSC MI, Dept. of Epidemiology, Gliwice, Poland

Background: Radiotherapy in H&N region may lead to xerostomia. The purpose of this study is to prove the correlations between the radiation doses in parotid and submandibular glands and their salivary extraction fractions (SEF) measured by dynamic scintigraphy.

Material and methods: In 20 patients with pharyngeal and laryngeal cancer irradiated to total dose in range 62.5–72 Gy parotid and submandibular SEF were measured. Parotid and submandibular gland dose-volume histograms were obtained from 3D-computer treatment planning. SEF measurements were performed before (baseline) and 6 weeks after radiotherapy by 185 MBq 99Tc injected intravenously. Parotid and submandibular SEF rates were analysed in relation to radiation doses accumulated in (mean doses were respectively 34.8 Gy±8.5 Gy and 58 Gy±8.7 Gy, minimal doses were respectively 11.3 Gy±7.3 Gy and 46.4 Gy±10.9 Gy).

Results: Pre- and post-treatment SEF was measured for 40 submandibular and 40 parotids. Six weeks after radiotherapy SEF was generally lower by 51% but in 6th month was lower by 55% compared to the pre-treatment values. There was a significant correlation between SEF-ratios after 6 weeks of completing radiotherapy and radiation dose delivered to parotids (r = -0.67, p = 0.002). For submandibular glands there was no correlation between SEF ratios and radiation dose. There was also significant correlation between SEF-ratios after 6 weeks (p = 0.02) and % of irradiated volume of parotids.

Conclusions: The amount of SEF in parotid glands measured 6 weeks after radiotherapy clearly reflects dose-response relationship of irradiated