Effect of various patient and treatment related factors on the outcome with respect to xerostomia and dysphagia were analyzed.
Results: Fifty one consecutive eligible patients participated in this prospective study. There were 48 males and 3 females (median age 54 years). Median treatment to evaluation time (follow up) for the entire group was 50 months (2−201months). Forty seven patients had received combined EBRT and BRT while 4 patients received BRT alone. EBRT was delivered using standard portals with a median dose of 44 Gy/22 fractions over 4 weeks. BRT was low dose rate in 23 patients and high dose rate in 28 patients. Median dose of BRT was 30 Gy with LDR and 20 Gy with HDR BRT. The median xerostomia score was only 16 (Range: 0−73) suggestive of recovery of the salivary glands. There was no difference in the xerostomia while eating (stimulated) vs at rest (basal) for the entire population. Xerostomia scores in patients treated with LDR BRT vs HDR BRT were comparable. XQ scores compared favorably with published results using the same questionnaire after intensity modulated radiation therapy (IMRT) (Meirovitz 2006). Median dysphagia score was 2.4 (Range 1.4−3) for the entire population indicating good swallowing status post BRT. There was significant correlation between the xerostomia and the dysphagia scores (<0.001).
Conclusion: Patient reported xerostomia was consistently low with usage of brachytherapy both at rest (basal) and while eating (stimulated) signifying organ and function preservation. Significant correlation of dysphagia and xerostomia scores suggests that xerostomia and dysphagia are closely interrelated.

8539 POSTER

Induction chemotherapy with docetaxel, cisplatin and S-1 (TPS) followed by proton therapy concurrent with cisplatin in the patients with T4 nasal cavity cancer

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Background: In the treatment of the patients (pts) with T4 nasal cavity cancer, definitive chemoradiotherapy was contraindicated due to the risk of brain damage or blindness. The chemotherapy combination with docetaxel, cisplatin and S-1 (TPS) has shown to be well tolerated and active (Tahara M, ASCO2007, 2009). We conducted a retrospective analysis to evaluate the efficacy and feasibility of induction chemotherapy of TPS followed by proton therapy (PBT) concurrent with cisplatin in pts with T4 nasal cavity cancer.
Methods: Fourteen pts with T4 nasal cavity cancer treated with induction chemotherapy of TPS were analyzed. TPS consisted of 1-hour infusion of docetaxel at 60 to 70 mg/m^2, 2-hour infusions of cisplatin at 70 mg/m^2/day on day 1 and S-1 twice daily on days 1−14 at 60 to 80 mg/m^2/day. The treatment was repeated every 3 or 4-weeks with maximum number of treatment cycle of 3 cycles. According to the response of TPS, pts received either PBT concurrent with cisplatin or PBT alone.
Results: Nine males and 5 females; median age of 45.7 years (22−60); 7 olfactory neuroblastoma, 3 SCC and 4 others; 14 intracranial invasion and 5 optic nerve invasion. Median cycle of TPS was 2.6. Most common grade 3 or 4 hematological toxicities were neutropenia (59.4%). Most common grade3 or 4 non-hematological toxicities were nausea (13.5%). After the completion of TPS, 1 achieved complete response and 5 achieved partial response with an overall response rate of 42.8%. Of the 14 pts after receiving TPS, 11 received PBT concurrent with cisplatin, 2 received PBT alone and one received palliative radiation. No severe toxicity was observed during PBT. After the completion of PBT, 11 pts achieved complete response and 1 pts have not yet confirmed response. No brain damage or blindness was seen.
Conclusion: Induction chemotherapy of TPS followed by PBT concurrent with cisplatin was well tolerated. The antitumor activity is very promising, and this warrants further investigation.

8540 POSTER

Prospective assessment of cutaneous toxicities and treatment interruptions of the association radiotherapy – cetuximab for head and neck cancer patients

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Background: cetuximab is used with radiotherapy for patients with locally advanced head and neck squamous cell carcinomas (Bonner 2006). Toxicity profiles in the radiotherapy alone or the combination in the Bonner's trial were similar, except for acne-like eruptions. Nevertheless, several institutions have since reported increased radiation-dermatitis toxicities. Treatment interruptions have not been clearly reported. The aim of the study was to precise prospectively cutaneous semeiology and to assess the number of unplanned treatment interruptions in an unselected population in a single institution using a standardized assessment of cutaneous toxicities.
Materials and Methods: we conducted an institutionally-approved observational study on 25 consecutive patients treated with combination. Patients all signed an informed consent and underwent weekly anonymized standardized photographs of their neck, face and thorax. Toxicity grades were assessed by a dermatologist, a medical oncologist and radiation oncologist. Expected side effects treatments were standardized.
Results: median follow-up was 7.7 months. There were 20 males/5 females. Performance status was 0 in 52%, 1 in 28% and 2 in 20% of cases. Median age was 63.5 years (41.2−80.0). Primary tumor was in the oral cavity (n = 2), oropharynx (n = 16), nasopharynx (n = 1), larynx (n = 1), hypopharynx (n = 3) or cervical nodes (n = 2). Eight patients (32%) underwent induction chemotherapy using docetaxel-cisplatin-5FU. Sixteen (64%) had $\geqslant$ 7 infusions of cetuximab and 100% the planned dose of radiation. Median treatment time was 53 days (35−77), without any interruption in 14 cases (42%). Treatment interruptions occurred after a median 40 days of treatment (21−52) and lasted for a median 7.5 days (5−15). The maximal acne-like eruptions grade occurred at day 20 (7−55) after the first cetuximab infusion (grade $\geqslant$ 3 n = 2). The maximal in-field radiation-dermatitis grade occurred at day 40 (14−70) (grade $\geqslant$ 3 n = 10). Median weight loss was −2 kg (−10$\pm$4). Antibiotics (mainly tetracyclines) were administered in 19 patients (76%) and morphine in 12 (48%).
Conclusion: the combination of radiotherapy and cetuximab was associated with high rates of in-field radiation-dermatitis. However, all patients received the planned treatment with acceptable treatment breaks thanks to early management of cutaneous toxicities. The data presented at the meeting will include 10 additional patients.

8541 POSTER

Chemoprevention of phytochemicals for head and neck cancers

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Background: Head and neck squamous cell carcinoma (HNSCC) is one of the most common malignancies. Its multi-step and cumulative features strongly support the rationale for prevention or early treatment before invasive lesions grow. Cancer chemoprevention is a very promising strategy for this goal. Unfortunately, its widespread application in clinic has been hampered by several problems, particularly the systemic side effects. It is especially problematic for individuals who are on the medication requiring a prolonged period of time or who are ill due to a secondary cancer. In recent years, there was a significant trend toward the utilization of phytochemicals and other natural supplements as an alternative to traditional practice, to improve the treatment safety.
Materials and Methods: In this review, we explored and discussed the most recent research and clinical progress in chemoprevention of phytochemicals for NMSCs. Our literature search was limited to those reports and articles published within the past 10 years (1998−2008). In addition, references from each of the identified papers were reviewed to find additional related papers for this review.
Results: Based on recognition amongst the literature, four compounds were represented and discussed, which included resveratrol, green tea, perillyl alcohol and Ginger. More than 10 other compounds were also named, with brief introduction. Subsequent research and future study were discussed.
Conclusions: The application of phytochemicals and other natural compounds is an appealing approach for the chemoprevention of HNSCC, in that they are generally nontoxic, less costly and widely available. It would be a promising alternative to current managements, due to reduced side effects without sacrificing clinical advantages. Further studies are warranted to increase the treatment efficacy by improving their bioavailability and combining multiple agents and to validate their benefit in humans by clinical trials.

8542 POSTER

Retrospective analysis of the outcomes of young oral tongue cancer in the National Cancer Centre, Singapore

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Background: A retrospective study to compare the characteristics and outcomes of young oral tongue cancer in our local population.

Materials and Methods: All patients with oral tongue squamous cell carcinoma (SCC) treated with definitive or adjuvant radiotherapy (RT) in our department between January 1998 and December 2006 were included. They were categorized into 2 groups (Group A: ⩽40 years old and Group B: > 40 years old). Overall survival (OS), locoregional relapse-free survival (LRF) and metastasis-free survival (MFS) were calculated. Survival was estimated using Kaplan-Meier method. Qualitative variables were analyzed with Fisher exact test. $p < 0.05$ was deemed significant.
Results: Eighty-nine patients were included with 11 (12%) patients in Group A and 78 (88%) patients in Group B. There were 55% females in Group A compared to 21% in Group B ($p = 0.024$). Median age for all patients was 54 years (range 18−87), 30 years for Group A and 56 years for Group B. More patients in Group B had history of smoking and alcohol intake (41% vs. 18% and 31% vs. 18% respectively). Most patients (80%) had primary surgery. Two (2%) patients in Group B had definitive RT. Three (27%) patients in Group A and 12 (15%) patients in Group B were given definitive chemoRT. In Group A, 27% had T3/4 and 36% had N0 disease. In Group B, 49% had T3/4 and 15% had N0 disease. Group B tend to present with Stage 3/4 disease (94% vs. 73%, $p = 0.176$) but Group A had more poorly differentiated SCC (27% vs. 9%, $p = 0.484$). Margin status, lymphovascular/perineural invasion and extranodal extension were similar in both groups. Median follow-up were 13.9 months (3.4−83.9) for Group A and 13.7 months (2.3−117.0) for Group B. Four (36%) patients in Group A and 37 (47%) patients in Group B died of cancer. Two (18%) Group A and 2 (3%) Group B patients had persistent disease. Locoregional relapses were found in 18/36% and distant metastasis occurred in 9/15% in Group A and B respectively. Median OS for all patients was 96.9 months but this was not reached in Group A. The 2/5-year OS were 64/64% (Group A) and 59/52% (Group B). The 2/5-year LRF were 58/58% (Group A) and 56/53% (Group B). The 2/5-year MFS were 86/86% (Group A) and 84/81% (Group B). These survival differences were not statistically significant, even after stratifying for tumor stage (1/2 vs. 3/4).
Conclusions: Young oral tongue patients in our local population had similar pathological features and clinical outcomes compared to the older patients. However, locoregional failure was substantial in both groups and aggressive treatment is needed to improve outcome.

8543 POSTER

Hyperbaric oxygen concurrent with superselective intra-arterial carboplatin chemoradiotherapy enhances survival of patients with oral cancer

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Background: A hypoxic cell fraction within a tumor tissue decreases the effect of radiotherapy and chemotherapy and gives a poor prognosis. Because the oxygen tension of tumor tissues remains higher than that of normal tissue after hyperbaric oxygen (HBO) exposure, recent study suggests that irradiation within 15 min after HBO exposure enhances the antitumor effect of radiotherapy in malignant tumors. We retrospectively evaluated the effect of HBO given concurrently with intra-arterial carboplatin chemoradiotherapy in patients with oral cancer.
Patients and Methods: At our institution, 101 patients with oral cancer, including those with recurrent lesions or cervical lymph node metastasis, were treated with superselective intra-arterial carboplatin infusion, external beam radiotherapy, UFT (tegafur–uracil) and/or surgery between April 1995 and November 2008. Treatment was combined with HBO for 51 patients and 50 were treated without HBO exposure. HBO was administered in a multiplace hyperbaric chamber according to the following schedule: 13 min of compression with air, 60 min of oxygen inhalation using an oxygen mask with a reservoir at 2.5 atmospheres absolute, and 10 min of decompression with oxygen inhalation. Radiotherapy was performed five times weekly immediately after HBO exposure.
Results: See the table.

Table 1 Treatment result of the 101 patients/CAPTION>

Prognosis*	without HBO (50 tumors)	with HBO (51 tumors)
No evidence of disease	16	33
Alive with disease	0	3
Died of their disease	2811	
Died of another disease	6	4

*p-value = 0.001

Of the 51 patients whose tumors were treated with chemoradiotherapy without surgery, 30 also received HBO (CR-wHBO group) and 21 were treated without HBO (CR-woHBO group). Of the 50 patients whose tumors were resected after preoperative chemoradiotherapy, 20 received HBO (S-wHBO group) and 30 were treated without HBO (S-woHBO group). The disease-specific survival rate of patients treated with HBO (70%) was significantly higher than that of patients treated without HBO (40%) ($p = 0.012$). In addition, the five-year disease-specific survival rates were: S-wHBO group, 86%; S-woHBO group, 60%; CR-wHBO group, 53%; and CR-woHBO group, 27%. A logrank test showed that the differences between the survival rate of each group were significant ($p = 0.003$).
Conclusion: These results suggest that adding HBO to intra-arterial carboplatin chemoradiotherapy enhances the survival of patients with oral cancer, and that HBO is a useful adjunct to chemoradiotherapy for squamous cell cancer of the oral cavity.

8544 POSTER

A prospective, open-label, randomized phase II trial to evaluate the changes of bone resorption marker after administration of zoledronic acid (ZOL) in nasopharyngeal cancer (NPC) patients with bone metastases (BM)

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Background: ZOL is the only bisphosphonate that has demonstrated efficacy for the prevention of skeletal-related events (SREs) in patients with BM in a wide range of tumor types. Recent retrospective analyses also show that normalization of N-telopeptide of type I collagen (NTX) over 3 months by the treatment of ZOL provided a continuum of SRE risk reduction and survival benefit in patients with BM. Therefore, we conducted the prospective open-label randomized phase II trial to evaluate the changes of NTX after administration of ZOL in NPC patients with BM.
Methods: Newly diagnoses NPC patients with BM were randomized to receive chemotherapy of Cisplatin (20 mg/m^2 IV, D1−5) plus FU(500 mg/m^2 IV, D1−5) (CF regimen, q3wks) and intravenous ZOL (4 mg, q4wks, for 3months, CF+ZOL Group) or same chemotherapy alone (CF Group). Urinary NTX was measured by ELISA method at baseline and 1, 2, 3 months after administration of ZOL in all patients.
Results: Sixty patients were enrolled into the study, 30 patients in each group. The median chemotherapy numbers was same (4 and 4, respectively) in two groups. The median baseline NTX level was no difference between two groups (75.4 and 95.6 nM BCE/mM creatinine, respectively P>0.05). The NTX decreased 65.9% within 1 month in CF+ZOL group, whereas NTX increased 2.61% in CF group (P < 0.01). The median NTX decrease percentage in 2, 3 months after treatment were 70.8%, 86.5% in CF+ZOL Group and 15.9%, 34.5% in CF Group respectively (P < 0.01, P < 0.01).
Conclusion: ZOL administered with chemotherapy (CF) consistently reduced NTX levels in NPC patients with BM, indicating potential benefit of ZOL may exist in this group of patients. The value of NTX reduction in NPC patients with BM will need to further study in larger prospective randomized trials.

The median change from baseline values for NTx (%)

Time (m)	1	2	3
Group 1(CF+ ZOL)	−65.9	−70.8	−86.5
Group 2 (CF)	2.61	−15.9	−34.5
P value	P < 0.01	P < 0.01	P < 0.01

8545 POSTER

Prognostic value of ERCC1 T19007C polymorphism in head and neck squamous cell carcinoma (HNSCC) patients presenting with high- or intermediate-risk features treated with adjuvant chemoradiation (CRT)

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Backgroud: Adjuvant cisplatin (CDDP)-based CRT can increase progression-free survival (PFS) and overall survival (OS) in patients (pts) with high- or intermediate-risk HNSCC. ERCC1 is a DNA repair protein