PO-0634
Dementia risk in irradiated head and neck cancer patients: two national cohorts combined study in Taiwan
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Purpose/Objective: Head and neck cancer patients were managed with surgery, radiotherapy and chemotherapy. Carotid artery damage and neurotoxicity were found in the past. This study aimed to estimate the risk of dementia in head and neck cancer population with long-term follow-up.

Materials and Methods: The National Health Insurance (NHI) claims database and cancer registry databases in Taiwan from The Collaboration Center of Health Information Application (CCHIA) were linked for analysis. The head and neck cancer patients were included in the study from 1/1/2002 to 12/31/2010. The follow up duration was since index day to 12/31/2012. The inclusion criteria were head and neck cancers, age > 20 years old, surgery, chemotherapy, concurrent chemotherapy, or surgery with adjuvant treatment done. The exclusion criteria were cancer diagnosed before head and neck cancer confirmed, died or dementia diagnosed within 2 years after treatment of head and neck cancers, stroke before index day, distant metastasis, carcinoma in situ, sarcoma, head and neck cancer recurrence, unknown gender and younger than 20 years old. The total enrolled head and neck cancer patients were 20,135 persons.

Results: In surgery alone, surgery and adjuvant chemoradiotherapy, and chemoradiotherapy without surgery groups, there were 1.44, 1.04, and 1.98 dementia incidence per 1,000 person-year, respectively. The crude hazard ratio (HR) of dementia were 1.84 (95% confidence interval, 1.21-2.81) in radiation with/without chemotherapy (RT/CT) group. Adjusted for age groups, gender, clinical stage and the comorbidities, the HR were 1.68 (95% CI, 1.00-2.80). The dementia risk in head and neck cancer patients between different treatment modalities according Cox proportional hazard model revealed that the age > 65 years old and radiotherapy with/without chemotherapy (RT/CT) were risk factors (P < .001 and P = 0.049, respectively) (HR 16.46 and 1.68, respectively). The risk of dementia in different clinical stage head and neck cancer patients were not statistically significant (95% CI, 1.13-7.19) in different treatment groups, whatever radiotherapy or not. But in young age (< 65 years old) head and neck patients received radiotherapy with/without chemotherapy (RT/CT), high risk of dementia was 2.96 folds (95% CI, 1.24-7.08) and adjusted HR was 3.54 folds (95% CI, 1.32-9.51) to surgery alone group. Total radiation dose more than 6,660 cGy will result in 1.69 folds dementia risk trend than head and neck cancer patients with total radiation dose < 6,660 cGy.

Conclusions: High radiation dose (> 6,660Gy) will result in 1.69 folds dementia risk trend in head and neck cancer patients and persistent escalated dementia incidence even 9 years after radiotherapy. Young age (< 65 years old) head and neck cancer patients were susceptible for radiation therapy with high risk of dementia. We need to select patients better for dose de-escalation in young head and neck cancer patients and avoid unnecessary high dose to neck and areas near brain tissue, especially in Taiwan, the median age of head and neck patients was 53 years old.

PO-0635
FDG-PET-CT to assess response following chemoradiation for stage III/IV oropharyngeal squamous cell carcinoma
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Purpose/Objective: To evaluate the use of FDG-PET-CT as the principal investigation to assess tumour response and the need for further biopsies or surgery following radical chemoradiation for stage III/IV oropharyngeal SCC.

Materials and Methods: A retrospective analysis was undertaken of the 130 patients who completed radical treatment for Stage III/IV SCC of the oropharynx at our centre over a 3-year period (2010-2013). All patients were treated with IMRT (65Gy/30 fractions) +/- platinum-based chemotherapy or cetuximab. Our practice is that patients routinely have a PET-CT approximately 3 months after treatment to assess response.

Results: 119/130 (92%) patients had a PET-CT 3-4 months after treatment. The PET-CT findings and associated recommendations for further management are summarised in Table One. 83 (70%) had a complete response on either the initial PET-CT or on a follow-up scan 3-6 months later [Group 1]. Equivocal or suspicious residual uptake was seen in 27 (24%) patients [Group 2] - primary site only (10), neck only (12) and both primary & neck (5). In total, 15 of these 27 had negative biopsies/post-op histology (i.e. confirmed false positives). Salvage surgery to the primary site was performed in 2 patients (both with no residual malignancy on histology) and 11 patients had a salvage neck dissection (5 with confirmed residual malignancy on histology). In 9 (8%) patients, the PET-CT revealed new metastatic disease [Group 3]. At a median follow-up of 28 months from treatment completion, the progression free survival rates (PFS) were: 74% [all], 87% [Group 1], 56% [Group 2] and 0% [Group 3]. Having a reassuring initial PET-CT [Group 1] was associated with a significantly improved PFS (HR 0.12 [0.06-0.27], p<0.01).

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Conclusions: A reassuring PET-CT following radical chemoradiation predicts for a high progression-free survival rate. Using the finding of equivocal/suspicious residual FDG uptake to select patients for repeat biopsies or salvage surgery appears successful but patients need to be counselled...