duration. Median age was 61 years (range 30-83). Fourteen patients had confirmed SS. Eighteen patients were female (12 with SS) and 8 were male (2 with SS). Stage of disease includes: stage 1 (17 patients) stage 2 (17), stage 3 (1) and stage 4 (1). Patients with SS were treated with 4Gy and patients without SS were treated with 25.2Gy, unless they had advanced stage. Sites treated include: parotid (13 patients), orbit or conjunctiva (6), thyroid (1), tongue (1), palate (4) B-skin (1) Indications for treatment included pain, recurrent inflammation or unsightly mass. 17 patients received 4 Gy in 2 fractions (13 with SS) and 9 patients received 25.2 G in 14 fractions (1 with SS).

Results: The objective response rate (ORR= CR + PR, assessed 6 weeks after RT) was 100%. Twenty-two patients (84.6%) remain progression-free at the time of writing with median FU of 89 months (range 22 - 144). Two males (1 with SS) and one female had disease progression in the treated area at 3, 36 and 19 months respectively. All 3 relapses occurred in 4Gy dose group. Two patients were subsequently retreated with further 4Gy/2# and 20Gy/5# and achieved further progression-free survival of 36 and 60 months respectively. One female patient (4Gy/2#) underwent transformation to diffuse large B-cell lymphoma at 36 months. The distribution of relapses is summarised in table 1. Radiotherapy was well tolerated in all patients, with the most common long-term side effect being dry mouth in 3 patients (11.5%), cataract in 1 patient and watery eye in 1 patient. All three patients who reported dry mouth were known to have SS.

Conclusion: Radiotherapy is a very effective treatment for head and neck MALT lymphoma resulting in high response rate, durable local control and minimal toxicity. There were no relapses after 25.2Gy and only few relapses (3/17) after 4Gy, 2 of which had durable remission following retreatment.

Table 1: Distribution of relapses

<table>
<thead>
<tr>
<th>SS (no of relapses)</th>
<th>No SS (no of relapses)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Gy 13 (2)</td>
<td>4 (1, 1, 1)</td>
<td>17</td>
</tr>
<tr>
<td>25.2Gy 2</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Total 14</td>
<td>12</td>
<td>26</td>
</tr>
</tbody>
</table>

* transformation to DLBCL

PO-0669 Risk of second malignant neoplasms among long-term survivors of extranodal NK/T-cell lymphoma

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Purpose or Objective: The purpose of this study was to estimate risk and incidence of second malignant neoplasms (SMN) among long-term survivors of early stage extranodal nasal-type natural killer/T-cell lymphoma (NKTCL).

Material and Methods: Between January 1983 and December 2007, 174 patients with stage IE and IIIE NKTCL survived 3 or more years after treatment. Of them, 50 patients were treated with radiotherapy alone, 120 patients with combined modality therapy, and 4 patients with chemotherapy alone. The China 2010 population census data and Segi’s world population data were used for calculating the age-standardized cancer incidence rates.

Results: Median follow-up time was 8.3 years (range, 3.1 - 35.6 years) for all patients. Nine (5.2%) SMNs were recorded. The median time to SMN was 12.6 years (range, 0.9 - 18.5 years) from diagnosis of NKTCL. Seven patients had solid tumors, and 2 had other type of malignant lymphomas. The cumulative incidence rates at 5-year, 10-year and 15-year were 1.2%, 2.4%, and 13.7% (Figure), respectively. The crude incidence was 531.6/105 person-years, the age-standardized rates by Chinese standard population (ASR China) and by world standard population (ASR world) were 294.5/105 and 243.7/105, and the cumulative incidence rate (0-74 age years old) was 22.4%. All of them were higher than the cancer incidence rates for general population in China in 2010.

Conclusion: A frequency of SMN in patients with NKTCL is higher than expected in the general population. The patients have more risk for SMN during 10 to 15 years after diagnosis of NKTCL. Patients with long-term survivor are at higher risk of SMN and should be carefully follow-up.

PO-0670 Efficacy of low dose radiotherapy in relapsed or refractory high grade non Hodkin lymphoma

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Purpose or Objective: Low dose radiotherapy (LDRT) provides effective palliation and local disease control in patients with low grade non Hodkin lymphoma (LGNHL). Its role in high grade NHL (HGNHL) remains unclear. The purpose of this study was to evaluate the efficacy of LDRT in relapsed/refractory (RR) HGNHL.

Material and Methods: We performed a retrospective review of all patients undergoing LDRT for RR HGNHL at our institution. LDRT was defined as a total dose of 8Gy or less in 1 or more fractions.

Sex, age, histological type, time from diagnosis to LDRT and number of prior systemic therapies were recorded, along with radiotherapy dose and site treated. Outcomes included overall response rate (ORR), in field recurrence, time to progression (TTP) and overall survival from completion of RT. Toxicity was also recorded. Analysis was performed by site and by patient as a number of patients had more than 1 site treated at different times.

Results: Between August 2004 and September 2015 15 patients received LDRT for HGNHL. 5 patients had >1 site treated, with LDRT being given to 37 sites in total. Most patients (12/15) had a diagnosis of diffuse large B cell lymphoma, which accounted for 32/37 (86.5%) of all sites. Patient and treatment characteristics are shown in table 1.
Overall response rate (ORR) for all sites was 89.2% (33/37 sites). 17 sites (45.9%) achieved a complete response (CR) and 16 sites (43.2%) a partial response. 4 sites (10.8%) did not respond to LDRT. Considering ORR by patient, 11/15 patients (73.3%) had a response to LDRT at all sites, 3/15 (20%) did not respond and 1 patient responded at 2 sites but not the 3rd.

Skin was the most commonly treated site (19/37, 51.4%) and skin sites had the highest ORR at 100%, with 73.7% (14/19) CR. This was statistically significant when compared to all other sites (p=0.046). ORR for nodal sites was 83.3% (5/6) and extra-nodal sites was 85.7% (6/7). Bone sites had the lowest ORR at 60% (3/5 cases) with no CR.

16 sites received a total dose of 4Gy in 1 or 2 fractions. 21 sites received either 6 or 8Gy in total. ORR in both groups was similar (87.5% versus 90.5%, p =1). Toxicity from LDRT was minimal, with no toxicity recorded above grade 2.

Of the 33 initially responding sites there have been 4 infield recurrences (12.1%). Median TTP was 4.8 months (3.1-11.8). 2 sites were retreated with further symptomatic benefit. Median duration of response was 3.6 months (0.5-126.7). 6 sites (2 patients) had responses lasting >30 months. The majority of patients died without documented local recurrence, with median overall survival from LDRT of 2.4 months (0.03-126.7).

Conclusion: LDRT is an effective palliative treatment for patients with RR HGNHL and anticipated short survival, achieving high response rates and excellent local control, with minimal toxicity and inconvenience. A small subgroup of patients with slowly relapsing disease derived durable remissions with LDRT.

PO-0671 Risk of cardiac damage after mediastinal radiotherapy for Hodgkin’s disease

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Purpose or Objective: Hodgkin lymphoma (HL) has become a highly curable lymphoid malignancy. The improved prognosis of HL has been accompanied by increasing incidence of adverse late effects. Mediastinal radiotherapy (RT) and cardiotoxic chemotherapy (CT) with anthracyclines are routinely used to treat HL, but they could be associated with a variety of cardiovascular complications in long-term HL survivors. The aim of this study is to evaluate the late cardiovascular toxicity of a series of 202 pts treated from 1995 to 2012.

Material and Methods: 420 patients (pts) were treated for HL with RT +/- CT at our institution from 1995 to 2012. All the alive patients were contacted and invited to participate to the study. A detailed medical history of the 202 pts who accepted and subscribed informed consent was obtained, collecting events occurred after treatment; they had medical examination, ECG, Echocardiogram TT and blood tests. Treatment features were extracted from medical records. The entire group was divided in two groups: 157 pts received mediastinal RT (cases) and 45 pts did not (controls). The cardiac events were categorized using CTCAE ver. 4.0. A preliminary descriptive statistic using SPSS® software (x2 test) has been performed and here presented. The contouring of the different cardiac structures for dosimetric evaluation is ongoing.

Results: The patients and therapeutic characteristics of the patients are summarized in Table 1. After a median follow-up of 8 years (range 2-20 years) 144 pts (71.3%) manifested cardiac alterations: 1.0% arrhythmia, 2.5% ischemia, 1.5% heart failure and 66.3% valvular fibrosis without statistical differences between cases and controls. Most patients (75.4%) had asymptomatic grade I-II valvular fibrosis; only one had grade III valvular fibrosis. After treatment, with a median follow up time of 11.2 years, (range 4.1-17.8 years), acute myocardial infarction occurred in 5 pts, all in the group of cases.

Conclusion: The study does not show a direct association between late cardiac toxicity and mediastinal RT. Multi-parametric statistical analysis to evaluate a possible