Nodal Disease in Post-Chemoradiotherapy Neck Dissection

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ABSTRACT

Objective: To determine the incidence of neck node pathological positivity in patients with squamous cell carcinoma of the larynx, hypopharynx and oropharynx undergoing planned neck dissection post-chemoradiotherapy and to determine impact on outcome.

Design: Retrospective case series.

Results: Thirty-eight neck dissections were carried out in 33 patients (median age 59 years; 85% male) with 5 patients having bilateral neck dissections between May 2003 and Oct. 2007. The oropharynx was the most common primary site (n = 27; 73%). The median follow-up duration was 35 months (range 9-61 months). Pathologically, 39.4% (13/33) of patients had viable tumour cells identified in the neck dissection specimen. Two of 5 patients (40%) with clinical complete response showed presence of viable tumour cells on microscopic examination. This is due to the relatively high incidence of distant metastasis, second primary tumours, age and comorbidities2. This study aims to determine the incidence of tumour viability in planned neck dissection specimens in patients treated with CRT for advanced stage squamous cell carcinoma (SCC) of the oropharynx, larynx and hypopharynx, and to determine the impact on survival outcome.

METHODS AND MATERIALS

Chemo-radionuclide therapy (CRT) as primary treatment for organ preservation in head and neck cancer patients has shown promising results with high rates of locoregional disease control. Despite its effective locoregional disease control, improved overall survival remains small; a large meta-analysis of 93 randomised trials (17,346 patients) evaluating the effects of chemoradiotherapy added onto radiotherapy on survival yielded an observed survival benefit of only around 4% at 5 years, but larger for concomitant chemoradiotherapy.1 This is due to the relatively high incidence of distant metastasis, second primary tumours, age and comorbidities.2

RESULTS

Thirty-eight neck dissections were carried out in 33 patients with 5 bilateral neck dissections (Table 1). The oropharynx was the most common primary site (n = 27; 73%). The median follow-up duration was 35 months (range 9-61 months). The time from completion of radiotherapy treatment to surgery ranged from 4 to 24 weeks (median ± SD, 8 ± 5.5 weeks). Pathologically, 39.4% (13/33) of patients had viable tumour cells identified in the neck dissection specimen. Two of 5 patients with clinical complete response showed presence of viable tumour cells on microscopic examination and 60.7% radiologically suspicious necks were negative pathologically. Three patients (9%) developed primary site recurrence. Patients with viable tumour had a poorer DSS compared to those with no viable tumour (67% vs 100%, p=0.01; Fig 1). One patient (5%) died from locoregional disease and two patients (6%) died from distant metastasis. There was no statistical significant (p=0.37) increase in neck recurrence rate in SND group when compared to MRND and RND group.

CONCLUSIONS

In our case series, we found that 39.4% of patients had viable tumour cells identified in their neck dissection specimens. Review of the literature reveals a large variation in the overall positive residual neck disease on pathological evaluation ranging from 0.4% to 58%. The reasons for such a variation in the incidence is due to the differences in patient numbers, tumour type and tumour sub-sites, and treatment related factors which impact on treatment response. Patient factors include differences in smoking exposure, alcohol consumption, as well as, differences in HPV exposure which is now recognized as the main aetiological factor in oropharyngeal cancer. It is now widely recognized that HPV related cancers often respond more effectively to CRT compared to smoking related H&N cancer. In our own study, majority of our patients were heavy smokers and alcohol drinkers. In addition, over two-thirds of our patient population’s primary site was in the oropharynx which could indicate HPV was an important factor in our patient cohort. We also found that patients who had residual tumour in the neck had poorer overall survival (29% vs 54%) and disease specific survival (67% vs 100%) even though all viable tumour was removed at the time of neck dissection. Patients with viable tumour who subsequently developed further recurrence and died represented a cohort of patients who have more aggressive biology.

REFERENCES


Table 1: Patient and tumour characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Baseline Mean ± SD</th>
<th>Range</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>59 ± 5</td>
<td>9-61</td>
</tr>
<tr>
<td>Gender (male/female)</td>
<td>85/15</td>
<td></td>
</tr>
<tr>
<td>Primary Site</td>
<td>Oropharynx (27)</td>
<td></td>
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<tr>
<td>Radiotherapy duration (weeks)</td>
<td>8 ± 5.5</td>
<td>4-24</td>
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</tbody>
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Figure 1: Disease specific survival stratified by tumour viability in dissection specimen

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