Late Onset Radiation-Induced Cranial Neuropathies in Non-Nasopharyngeal Head & Neck Cancers

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Abstract

Objective: Discuss a single institution’s experience in managing late complications associated with radiation-induced nerve damage.

Methods: Retrospective review of 3 patients presenting for management of voice and swallowing disorders after completion of treatment for non-nasopharyngeal head and neck cancer were reviewed in a retrospective fashion. All 3 patients experienced onset of symptoms at least 3 years following completion of therapy. Characteristics of the patients’ demographics, tumor site and stage, radiation dose (if available), as well as symptom type, onset, progression, treatment and impact on daily activities were discussed.

Results

Three patients were identified who have undergone evaluation and treatment for voice and swallowing symptoms that were identified to be related to radiation for non-nasopharyngeal H&N carcinoma.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Tumor Location</th>
<th>Stage</th>
<th>Cranial Nerves Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Oropharynx</td>
<td>T2N0M0</td>
<td>V, IX, X, XII</td>
</tr>
<tr>
<td>2</td>
<td>Lung apex</td>
<td>---</td>
<td>RLN</td>
</tr>
<tr>
<td>3</td>
<td>Unknown</td>
<td>TxN2bM0</td>
<td>IX, X, XII</td>
</tr>
</tbody>
</table>

Patient 1

RL was treated for T2N0M0 SCCA of the oropharynx in 2003. In 2008, the patient presented to the Voice and Swallowing Center with complaints of xerostomia and dysphagia. Outpatient swallowing therapy led to significant improvement in symptoms until 2011.

At that time, marked worsening in symptoms prompted FEES exam where the patient was noted to tolerate soft foods only. Key findings during the exam included left tongue atrophy, decreased tongue strength, no palate elevation and poor pharyngeal constriction.

Neurology consultation revealed “multiple lower cranial neuropathies on exam without extracranial weakness/ptosis or obvious fatigability, fasciculations or pathological reflexes…and no upper motor neuron signs.” Electromyography confirms the suspected diagnosis of post-radiation neuropathy, specifically based on the presence of myokymia.

Over the next 12 months, the patient experienced new onset voice symptoms including poor projection, fatigue and severe hypervasality. Exam revealed left vocal fold paresis. Cord paresis combined with further decline in pharyngeal function led to multiple admissions for aspiration pneumonia, and gastrostomy tube placement despite multiple esophageal dilation procedures.

Conclusions

Risk to cranial nerves in radiation for nasopharyngeal cancers is well-documented as treatment fields necessarily include skull base structures.Less well-described are late-onset complications of radiation for laryngeal, oropharyngeal and other neck cancers. Esophageal dilation, tracheostomy, and swallow therapy may be necessary years after chemoradiation.

References