Laryngeal Chondrosarcoma Arising From Cricoid Cartilage: A Case Report

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Abstract- Laryngeal chondrosarcoma is a rare tumor that involves head and neck region such as larynx in rare cases. This indolent tumor usually grows quite slowly. The patient may experience symptoms for several years before a diagnosis is made. The diagnosis is achieved by clinical, radiological and pathological features. Management is basically surgical. Prognosis is generally good, depending basically on histologic grade. Herein, we report a case of laryngeal chondrosarcoma presented with hoarseness. Spiral CT scan demonstrated an expansile mass with calcification originating from cricoid cartilage. The patient underwent surgery for open excisional biopsy, and postoperative histopathologic evaluations confirmed “laryngeal chondrosarcoma” as definite diagnosis. The patient denied total laryngectomy for complete removal of the tumor. Six months follow up showed no more growth.

Keywords: Larynx; Chondrosarcoma; Cricoid cartilage; Conservative surgery

Introduction

Laryngeal chondrosarcomas (LCSs) are rare tumors representing only 0.07-2% of all laryngeal cancers (1,2). LCSs generally have an indolent behavior. Majority of them are low or intermediate grade, histologically (3). LCSs most commonly involve hyaline cartilage structures such as cricoid and thyroid cartilages in men older than 50 years of age (3,4). The clinical features are present for a long duration (On average, over 2 years) depending on site of the mass (5,6). Hoarseness, dyspnea, dysphagia, and stridor are some of LCSs clinical presentations (5). The treatment is based on surgery, which can be performed through endoscopy or open technique (6,7). The prognosis of low-grade chondrosarcoma is generally good (8). We hereby report low-grade laryngeal chondrosarcoma in a 43-year-old man who underwent conservative surgical excision.

Case Report

A 43-year-old non-smoking man was admitted to our hospital because of hoarseness. The patient had a 10-year history of the neck mass; however, hoarseness started 3 months ago. The mass location was in the right neck zone and gradually got bigger. The patient didn't have weight loss, dysphagia, odynophagia, cervical pain, discharge, fever or chills.

On examination, a lobulated stony-hard mass with a size of 5×8 cm was palpated in the right side of the neck (Zone 3). There was no tenderness, erythema or discharge. The mass moved on swallowing. There was not palpable cervical lymphadenopathy. Chest X-ray showed tracheal compression with deviation to the left side. The indirect Laryngoscopy with flexible fiber optics revealed a subglottic bulging, particularly in the right side. Spiral computed tomography (CT) scan with intravenous (IV) contrast demonstrated an expansile mass originating from cricoid cartilage with calcification. The mass was extended to the first ring of the trachea, and the outer surface of internal laryngeal mass was exophytic with the intact mucosal surface. There was no evidence of enlarged cervical lymph nodes. (Figure 1). The patient underwent surgery. The calcified
mass with stony-hard consistency, which was involved in laryngeal nerve, was excised and completely shaved from cricoid cartilage and first tracheal ring (Figure 2). Frozen section specimen was sent to the laboratory which was compatible with chondrosarcoma.

Microscopic examination revealed an irregular mass with stony-hard consistency, gray cut surface. Microscopic evaluation showed lobulated cartilaginous tumor in myxoid areas. Tumoral cells had round nuclei and eosinophilic cytoplasm. Scattered cells revealed hyperchromatism nuclei with mild atypism. Binucleated figures were rare. Microscopic evaluation of permanent tissue sample was compatible with laryngeal chondrosarcoma (Figure 3).

In our patient tumor involved more than 50% of the cricoid cartilage and involved the first tracheal ring. For complete removal of the tumor, we must perform total laryngectomy because of the extent of the tumor. Our patient denied total laryngectomy, so we had to follow up him. Six months follow up revealed no metastasis and no more growth. The patient's hoarseness improved after surgery, but his voice was not completely normal six months after surgery. He is following up regularly and at the time of the writing has been asymptomatic for six months (Figure 4).

**Figure 1.** Coronal, axial and sagittal sections of neck CT scan before surgery demonstrate an expansile mass with calcification originating from larynx

**Figure 2.** (a) Intraoperative view (b) Surgical specimen

**Figure 3.** (a) H and E stain X4 (b) H&E stain X10 (c) H&E stain X40. Tumoral cells have round nuclei and eosinophilic cytoplasm. Scattered cells reveal hyperchromatism nuclei with mild atypism. Binucleated figures are rare
Discussion

Chondrosarcomas are malignant cartilaginous tumors involving head and neck region (9) (e.g. larynx) in rare cases. LCSs most commonly develop in cricoïd and thyroid cartilage in males older than 50 years of age (3,4). LCSs usually arise from the posterior cricoïd lamina (6). In our case, the tumor was originated from cricoïd cartilage. The exact etiology is unknown, but some probable risk factors have been recommended. For example, abnormal ossification (8), previous radiation exposure, Teflon injection and ischemic changes are some risk factors which are described in the literature (6). The mentioned risk factors were not present in the history of our patient.

The clinical manifestations vary from no symptoms in small tumors to presentations of dysphonia, dyspnea, dysphagia, stridor; but the pain is unusual (10). The most common symptom at onset is dysphonia resulting from involvement of glottic plane and compression of the laryngeal nerves (11). Our patient was admitted to the hospital because of hoarseness.

LCSs are usually slow-growing tumors (6). The symptoms frequently exist for a long duration before the diagnosis is established. Our patient was presented with a 10-year history of swelling on the right anterior zone of his neck which did not have hoarseness until 3 months before diagnosis. In other words, there was an interval period between the onset of tumor and clinical presentation in our patient. The diagnosis is based on clinical appearances, imaging and histopathology studies (8). CT scan and MRI modalities are used to identify the site and extension of the tumor (1). CT usually reveals a hypodense mass with fine, punctate stippled to course ("popcorn") calcification (5). In our patient, CT scan demonstrated an expansile mass arising from cricoïd cartilage with calcification. The mass had destructed cricoïd cartilage and was extended to the first ring of trachea (Figure 1).

These tumors are classified into three grade histologically: low-grade (grade I), medium-grade (grade II), or high-grade (grade III) (12). Microscopic examination in our case revealed laryngeal chondrosarcoma, grade I (Figure 3).

The treatment is based on surgery, which can be performed through endoscopy or open technique (6,7). Application of laser has been reported for treatment of laryngeal chondrosarcoma, too (13). In our patient, because of extent of tumor, we must perform total laryngectomy, but patient denied it. Six month follow up revealed no metastasis and no more growth. The patient's hoarseness improved after surgery, but his voice was not completely normal six month after surgery. The prognosis of laryngeal chondrosarcoma is generally good (8,14). Five-year survival rate in patient with laryngeal chondrosarcoma has been reported 90.1% (14). Previous reported cases of low-grade laryngeal chondrosarcoma arising from larynx have been summarized below (Table 1).

This case report emphasizes that: (1) laryngeal chondrosarcoma is a rare entity but clinically important condition; (2) there is an interval period between the onset of the tumor and clinical presentation in laryngeal chondrosarcoma; (3) it requires high degree of suspicion to diagnosis.
Laryngeal chondrosarcoma

Table 1. Previous reported cases of low-grade laryngeal chondrosarcoma

<table>
<thead>
<tr>
<th>Age/ Sex</th>
<th>Clinical Manifestation</th>
<th>Origin of tumor</th>
<th>Pathologygrade</th>
<th>Treatment</th>
<th>Radiotherapy/ Chemotherapy</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>59-year-old female</td>
<td>Progressive hoarseness of voice</td>
<td>Arytenoid cartilage</td>
<td>low</td>
<td>Cricoidectomy, partial laryngectomy and a permanent tracheostomy</td>
<td>-</td>
<td>[15]</td>
</tr>
<tr>
<td>34-year-old male</td>
<td>Pharyngeal foreign body sensation</td>
<td>Cricoid cartilage</td>
<td>Low</td>
<td>Hemicricoidectomy</td>
<td>-</td>
<td>[15]</td>
</tr>
<tr>
<td>48-year-old male</td>
<td>Right neck mass and dysphonia</td>
<td>Thyroid cartilage</td>
<td>Low</td>
<td>Partial laryngectomy</td>
<td>-</td>
<td>[10]</td>
</tr>
<tr>
<td>63-year-old male</td>
<td>Mass in the left lateral neck</td>
<td>Thyroid cartilage</td>
<td>Low</td>
<td>Partial laryngectomy.</td>
<td>-</td>
<td>[1]</td>
</tr>
<tr>
<td>51-year-old male</td>
<td>Inspiratory dyspnea</td>
<td>Cricoid cartilage</td>
<td>Low</td>
<td>Total laryngectomy</td>
<td>-</td>
<td>[1]</td>
</tr>
<tr>
<td>74-year-old male</td>
<td>Enlarging neck mass</td>
<td>Thyroid cartilage</td>
<td>Dedifferentiated</td>
<td>Total laryngectomy</td>
<td>-</td>
<td>[6]</td>
</tr>
<tr>
<td>61-year-old male</td>
<td>Painless and rounded swelling at the thyroid level</td>
<td>Thyroid cartilage</td>
<td>Low</td>
<td>Partial laryngectomy (Shave from thyroid cartilage)</td>
<td>-</td>
<td>[2]</td>
</tr>
<tr>
<td>60-year-old male</td>
<td>Dysphonia</td>
<td>Cricoid cartilage</td>
<td>Low</td>
<td>Glottic-hypoglossal laryngectomy</td>
<td>-</td>
<td>[8]</td>
</tr>
<tr>
<td>74-year-old male</td>
<td>Hoarseness</td>
<td>Cricoid cartilage</td>
<td>Low</td>
<td>Total laryngectomy, right partial thyroidectomy, partial pharyngectomy and a right selective neck dissection</td>
<td>-</td>
<td>[16]</td>
</tr>
<tr>
<td>70-year-old male</td>
<td>Breathy dysphonia</td>
<td>Cricoid cartilage</td>
<td>Not stated</td>
<td>Temporary tracheostomy and excision of the mass</td>
<td>-</td>
<td>[17]</td>
</tr>
<tr>
<td>36-year-old female</td>
<td>hoarseness and dyspnea</td>
<td>Cricoid cartilage</td>
<td>Low</td>
<td>Resection of the tumor with a margin of normal tissue.</td>
<td>-</td>
<td>[18]</td>
</tr>
<tr>
<td>51-year-old male</td>
<td>Inspiratory dyspnea and hoarseness</td>
<td>Arytenoid cartilage</td>
<td>Low</td>
<td>At first CO2 laser right arytenoidectomy and finally total laryngectomy</td>
<td>-</td>
<td>[19]</td>
</tr>
</tbody>
</table>

References


