INTRODUCTION

Cartilaginous tumors of the larynx, numbering approximately 300 cases in the literature, represent less than 1% of laryngeal tumors. Chondroma and “low-grade” chondrosarcoma are the most common; 70%–75% of these tumors arise on the endolaryngeal surface of the posterior lamina of the cricoid cartilage. The clinical presentation is varied and directly dependent on the size and location of the tumor; stridor, hoarseness, dyspnea, or a neck mass are common presenting signs. CT scanning in the axial plane is the mainstay of radiographic imaging due to its ability to show size, extent of the tumor, and invasion into surrounding structures. Surgical extirpation is the standard therapy with no role for radiation therapy or chemotherapy. Although significant recurrence rates have been reported, there is not a significant difference between initial conservative therapy followed by salvage therapy versus initial radical therapy. Key Words: Chondroma—Chondrosarcoma—Laryngeal tumors.

CASE REPORT

A 76-year-old black male with a history of sarcoidosis, 14 drinks per week alcohol use, and no tobacco or intravenous drug use presented to the otolaryngology service at the Kings County Medical Center in Brooklyn, with a history of persistent throat irritation and chronic dry cough for three months. He reported no shortness of breath, dysphonia, or dysphagia. Palpation of the neck revealed an ill-defined mass in the area of the left thyroid cartilage. He had bilateral level I adenopathy which was slightly mobile and nontender. Fiberoptic laryngoscopy revealed bilateral vocal fold mobility and no endolaryngeal lesions. The remainder of the head and neck examination was unremarkable.

A CT scan of the neck (Figure 1) revealed a 5 mm × 10 mm mass arising from the thyroid cartilage extending to the suprathyroid notch and left preepiglottic space (Figure 2). Additionally, bilateral 1-
cm submandibular lymph nodes with central necrosis were detected. Direct laryngoscopy, rigid bronchoscopy, and rigid cervical esophagoscopy were performed, revealing no masses or mucosal irregularities. Excisional biopsy of the left neck mass revealed a noncaseating granulomatous pattern consistent with sarcoidosis. Neck exploration revealed the laryngeal mass arising from the left thyroid lamina without violation of the laryngeal mucosa. A frozen section was interpreted as laryngeal chondroma. The mass was completely excised along with a margin of normal appearing cartilage without violating the endolaryngeal perichondrium. The final pathological examination was consistent with chondroma (Figure 3). The postoperative course was uncomplicated. Outpatient evaluation revealed no dysphonia and a normal airway on fiberoptic examination. There was no evidence of recurrence of the lesion at 3 months.

DISCUSSION

Cartilaginous laryngeal tumors can be classified into four groups: chondrometaplasia, chondrosarcoma, chondroma, and cartilage within otherwise classified lesions. True chondromas of the larynx are extremely rare; histologic differentiation between chondroma and chondrosarcoma can be very difficult. Of the 250 cases of cartilaginous laryngeal tumors reported, there is controversy over the incidence of chondrosarcoma versus chondromas. Cantrell et al5 and Lavertu and Tucker6 estimate the incidence of chondrosarcoma at about 30% of all reported cartilaginous tumors, while Tiwari et al3 estimate that greater than 50% of tumors are chondrosarcomas. A study of 33 patients by Neel and Unni7 revealed only 2 chondromas with 31 chondrosarcomas, supporting the generally accepted higher (> 50%) prevalence of chondrosarcoma. Most chondrosarcomas (> 50%) are low grade, and therefore can be easily confused with chondroma.

Laryngeal chondromas are often less than 2 to 3 cm in diameter and arise in both children and adults. In contrast, chondrosarcomas tend to be larger at presentation (> 3 cm) and patients are older at presentation (in their sixth and seventh decades). The clinical presentation is varied and directly dependent on the size and location of the tumor. Since most chondromas originate in the subglottis, stridor, hoarseness, and dyspnea are common initial findings. Supraglottic tumors may produce hoarseness, dyspnea, dysphagia, odynophagia, otalgia, or present as a neck mass. (Dyspnea suggests occlusion of 75% or more of the tracheal lumen.) There is a male preponderance of three or four to one. Histologically, laryngeal chondromas show a homogenous, monotonous pattern, with low cellularity.
[no more than 30 to 40 nuclei per high-power field (hpf)]. The nuclei are described as typical, with no apparent mitoses. Low-power microscopy reveals a lobular growth pattern. Low-grade chondrosarcomas can be very difficult to differentiate from chondromas histologically. Higher-grade chondrosarcomas have an increased cellularity (40 to 50 nuclei/hpf), more nuclear pleomorphism, and identifiable mitotic figures. Metastases are found in 8% of cases; hematogenous spread is the primary route for metastasis (to the lungs, kidneys, cervical spine, and subcutaneous nodules in descending frequency) with local nodal spread rarely described. In 1944, Lichtstein and Jaffe were the first to set criteria for the diagnosis of chondrosarcoma versus chondroma. A tumor should be considered malignant if there are many cells noted to have plump nuclei, there are more than occasional cells with two plump nuclei, or there are giant cartilage cells with single or multiple nuclei or clumps of chromatin. Vascular invasion can be seen with both benign and malignant tumors, and so is not used as a differentiating criterion.

RADIOLOGICAL DIAGNOSIS

CT scanning in the axial plane is the mainstay of radiographic imaging due to its ability to show size and the extent of the tumor and invasion into surrounding structures. Plain films of the neck usually reveal a discrete, smooth soft tissue mass in the airway narrowing the lumen. Coarse calcifications are a pathognomonic sign seen in 75% of patients with chondromas of the larynx. MRI has not been described in the evaluation of laryngeal cartilaginous tumors despite its multiplanar imaging, its ability to characterize lesions using multiple pulse sequences, and its ability to demonstrate vessels without contrast agents, all without the use of ionizing radiation. CT will continue to be utilized due to MRI’s increased cost, greater imaging time, increased sensitivity to patient motion, and its contraindication in certain patients with implanted metallic foreign bodies (some aneurysm clips, neurostimulators, and cochlear implants).

TREATMENT

Surgical extirpation is the mainstay of therapy with no long-term role for radiation therapy, and no role for chemotherapy. Proper tissue diagnosis is essential prior to initiation of definitive treatment. Tracheostomy placement at the time of biopsy may be necessary depending on the size, location, and firmness of the tumor. Due to the slow growth of
these tumors and their low rate of metastases, conservative removal is a viable alternative as long as tumor-free margins can be achieved. Significant recurrence rates have been reported by Hyams and Rabuzzi; this issue has lead some to advocate initial radical procedures, although there is not a significant difference when compared to those who undergo initial conservative therapy followed by salvage therapy. Despite this, there are some established criteria for initial total laryngectomy procedures described by Jones et al in 1973. Total laryngectomy is advocated for recurrences, anaplastic or high-grade chondrosarcomas, or large tumors where a sufficient amount of the laryngeal skeleton cannot be preserved to prevent collapse or stenosis of the airway. Others have added that total laryngectomy is indicated when a high-grade tumor has extended beyond the confines of the primary cartilage and into adjacent structures.

SUMMARY

Chondromas are rare tumors easily confused with “low-grade” chondrosarcomas on histologic examination. Due to their slow growth and low rate of metastases, initial management should consist of a conservative resection with close follow-up. Failures can be salvaged with a more radical procedure with near equal cure rates as compared to those who underwent initial radical surgery.

REFERENCES