Laryngeal Chondrosarcoma Arising From Cricoid Cartilage: A Case Report

Mansour Moghimi[1], Mahmood Kazeminasab[2], Mohammad Reza Vahidi[3], Mojtaba Meybodian[3], Mojtaba Babaei Zarch[4], Mostafa Babai[5]

[1] *Department of Pathology, School of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran*

[2] *Student Research Committee, Shahid Sadoughi Univerity of Medical Scineces, Yazd, Iran*

[3] *Department of Otolaryngology-Head and Neck Surgery, Otorhinolaryngology Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran*

[4] *School of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran*

[5] *Resident of Radiology, School of Medicine, Ahvaz Jundishapour Univerity of Medical Scineces, Ahvaz, Iran*

Received: 03 Nov. 2016; Accepted: 16 May 2017

Abstract- Laryngeal chondrosarcoma is a rare tumor that involves head and neck region such as larynx in rare cases. This malignant 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.

Acta Med Iran 2018;56(6):405-409.

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 third 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

Corresponding Author: M. Babaei Zarch
School of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
Tel: +98 35 38224000, Fax+98 35 38224001, E-mail address: mojtaba.babaei72@yahoo.com

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 cytoplasms. 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).

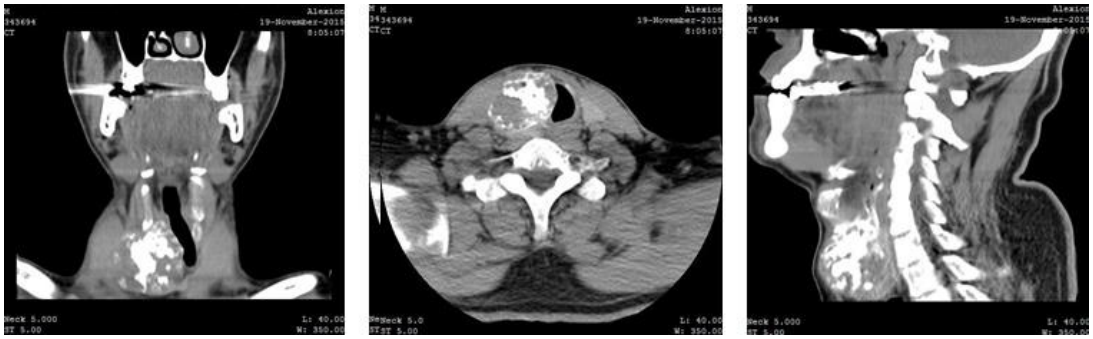

Figure 1. Coronal, axial and sagittal sections of neck CT scan before surgery demonstrate an expansile mass with calcification originating from larynx

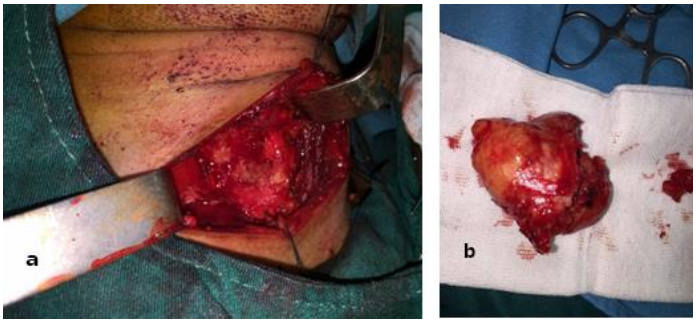

Figure 2. (a) Intraoperative view (b) Surgical specimen

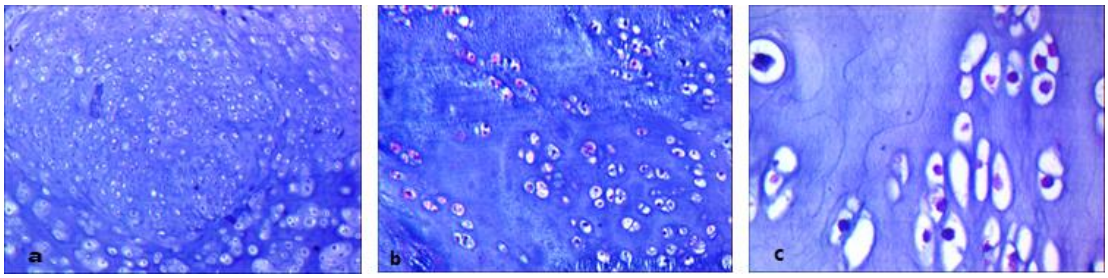

Figure 3. (a) H and E stain X4 (b) H&E stain X10 (c) H&E stain X40.Tumoral cells have round nuclei and eosinophilic cytoplasms. Scattered cells revealhyperchromatism nuclei with mild atypism. Binucleated figures are rare

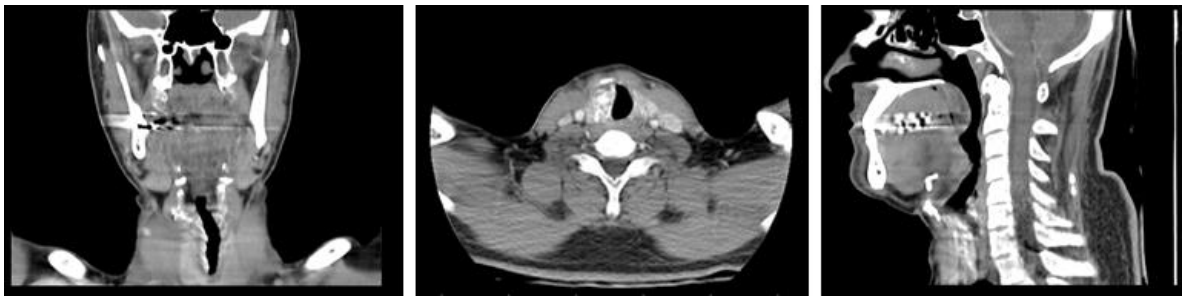

Figure 4. Sections of neck CT scan, six months after surgery

Discussion

Chondrosarcomas are malignant cartilaginous tumors involving head and neck region (9) (e.g.larynx) in rare cases .LCSs most commonly develop in cricoid and thyroid cartilage in males older than 50 years of age (3,4). LCSs usually arise from the posterior cricoid lamina (6). In our case, the tumor was originated from cricoid 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 cricoid cartilage with calcification. The mass had destructed cricoid 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 reported90.1% (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.

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

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

References

1. Tegtmeyer CJ, Hartwell GD, Selby JB, Robertson R Jr, Kron IL, Tribble CG. Results and complications of angioplasty in aortoiliac disease. Circulation 1991;83:53-60.
2. Murphy KD, Encarnacion CE, Le VA, Palmaz JC. Iliac artery stent placement with the Palmaz stent: a follow-up study. J Vasc Intervent Radiol 1995;6:321-9.
3. Henry M, Amor M, Ethevenot G, Henry I, Amicabile C, Beron R, et al. Palmaz stent placement in iliac and femoropopliteal arteries. Radiology 1995;197:167-74.
4. Brothers TE, Greefield LJ. Long-term results of aortoiliac reconstruction. J Vasc Intervent Radiol 1990;1:49-55.
5. Gaines PA, Cumberland DC. Wire loop technique for angioplasty of total iliac artery occlusions. Radiology 1988;168:275-6.
6. Ring EJ, Freimann DB, McLean GK, Schwarz W. Percutaneous recanalization of common iliac artery occlusions. AJR Am J Roentgenol 1982;139:587-9.
7. Colapinto RF, Stronell RD, Johnston WK. Transluminal angioplasty of complete iliac obstructions. Am J Roentgenol 1986;146:859-62.
8. Isner JM, Cohen SR, Virmani R. Complications of the intraaortic balloon counterpulsation device: clinical and morphologic observations in 45 necropsy patients. Am J Cardiol 1980;45:260-8.
9. Kussmaul WG, BuchbinderM, Whitlow PL. Rapid arterial hemostasis and decreased access site complications after cardiac catheterization and angioplasty. J Am Coll Cardiol 1995;25:1685-92.
10. Johnston KW. Iliac arteries. Radiology 1993;186:207-12.
11. Blum U, Gabelmann A, Redecker M, Nöldge G, Dornberg W, Grosser G, et al. Percutaneous recanalization of iliac artery occlusions: results of a prospective study. Radiology 1993;189:536-40.
12. Sullivan TM, Childs MB, Bacharach JM, Gray BH, Piedmonte MR. Percutaneous transluminal angioplasty and primary stenting of the iliac arteries in 288 patients. J Vasc Surg 1997;25:829-38.

13. Vorwerk D, Gunther RW, Schurmann K, Wendt G. Aortic and iliac stenoses. Follow-up results of stent placement after insufficient balloon angioplasty in 118 cases. Radiology 1996;198:45-8.
14. Hausegger KA, Lammer J, Klein G, Aschauer M. Percutaneous recanalization of pelvic artery occlusionsfibrinolysis, PTA, stents. Rofo 1991;155:550-5.
15. Waksman R, King SB, Douglas JS. Predictors of groin complications after balloon and new-device coronary interventions. Am J Cardiol 1995;75:886-9.
16. Fruhwith J, Pascher O, Hauser H. Local vascular complications after iatrogenic femoral artery puncture. Wien Klin Wochenschrift 1996;108:196-200.
17. Belli AM, Cumberland DC, Knox AM. The complication rate of percutaneous peripheral balloon angioplasty. Clin Radiol 1990;41:380-3.
18. Lodge JP, Hall R. Retroperitoneal haemorrhage: A dangerous complication of common femoral arterial puncture. Eur J Vasc Surg 1993;7:355-7.
19. Chong WK, Cross FW, Raphael MJ. Iliac artery rupture during percutaneous angioplasty. Clin Radiol 1990;41:358-9.
20. Formichi M, Raybaud G, Benichou H. Rupture of the external iliac artery during balloon angioplasty: Endovascular treatment using a covered stent. J Endovasc Surg 1998;5:37-41.
21. Sreeram S, Lumsden AB, Miller JS. Retroperitoneal hematoma following femoral arterial catheterization: A serious and often fatal complication. Am Surg 1993;59:94-8.
22. Sharma S, Arya S, Mehta SN. Renal vein injury during percutaneous transluminalrenal angioplasty in nonspecific aortoarteritis. Cardiovasc Intervent Radiol 1993;16:114-6.