Laryngocoele: our experience

D. Barman · B. Pakira · P. Majumder · S. K. Ghosh · A. Banka · S. Dutta

Abstract Laryngocoele is an extremely rare condition. Three cases of Laryngocoeles are presented. Two cases had infected laryngocoeles. The diagnosis was done clinically and confirmed radiologically. No predisposing factor was found except in one case who was a singer by profession and initially presented with stridor which was an unusual presentation. Surgical excision were done in two cases (case 1 and 3) and both the case were symptom free.

Keywords Laryngocoele · Laryngopyocoele

Introduction

In 1929, the term laryngocoele was first described by Larry, surgeon to Napoleon's army in Egypt. He described as the compressible pouches related to the thyrohyoid membrane amongst the Muzzins, who shouted Korans from the roof of the mosques.

In 1867, Virchow named this affliction "Laryngocoele Ventricularis" to describe an air filled dilatation of the ventricular saccule.

A patient of laryngocoele usually presents with a soft compressible lateral neck swelling of long duration which increases in size on Valsalva's manoeuvre. Males are much more sufferer and the peak age incidence is at 50–60 years. The patient may be asymptomatic. The other symptoms are hoarseness of voice, dysphagia, snoring, cough, stridor. In about 8% of cases may present with infected sacs or laryngopyocoeles (Stell and Maran, 1975). Clinical diagnosis is easy but sometimes may pose with problem. Radiological investigations show air containing cystic cavity in communicating with the larynx or a soft tissue density with air fluid level. The treatment includes surgical excision of the sac. Because of rarity of the lesion we present three such cases.

Materials and methods

Between January 2000 and September 2004, three patients were examined. All the patients were male and their age ranged from 40–67 years. They were treated surgically except one who refused operation.

Case 1

A 49-year-old male patient was admitted with the complaints of recurrent sore throat and swelling on the right side of the neck for the last 1 year. The swelling used to increase in size while blowing the nose or at the time of defaecation. There was no history of voice change, stridor or dysphagia.

D. Barman¹ · B. Pakira¹ · P. Majumder² · S. K. Ghosh³ · A. Banka¹ · S. Dutta¹

¹Department of ENT, N.R.S. Medical College, Kolkata, India

²Department of ENT, Midnapur Medical College, Midnapur, W.B., India

³Department of ENT, Calcutta Medical College Kolkata, India

D. Barman (✉)
e-mail: debasis_barman06@sify.com

There was no associated pain. There was history suggestive of constipation.

On examination of the neck revealed a soft cystic swelling on the right side of the neck at the level of hyoid bone, which increased on Valsalva's manoeuvre. It was non tender with diffuse margin and was non-pulsatile. The vocal cords were normal. The examination of nose, ear were normal. X-ray of the soft tissue neck revealed an air filled cavity on the right side. CT scan was not done in this case. The patient was operated under GA.

Case 2

A 46-year-old male patient was attended with the complaints of hoarseness of voice for 2 years. He gave no history of respiratory distress, dysphagia, haemoptysis. He was not a diabetic. ENT examination was found normal. Chest X-ray was normal. On X-ray soft tissue neck (lateral view) revealed an air filled cavity and diagnosis of laryngocoele was made. Patient didn't agree to perform CT scan and further surgical treatment was also disagree by the patient.

Case 3

A 65-years-old male patient who used to sing 'folk song' attended with the complaints of respiratory distress over a period of 2 months who also had symptoms of change in voice and swelling on the right side of the neck since last 3 years. On further query patient gave the history of odynophagia and habitual constipation. For the last 2 months patient developed pain in and around the neck swelling and occasional rise of temperature. He had some conservative treatment outside and aspiration once. On examination a tense tender swelling (2×1.5 inch) on the right side of the neck was detected (Fig. 1). Owing to the inspiratory stridor patient felt problem to perform Valsalva's manoeuvre. The swelling was a little bit tender with diffuse margin and was non pulsatile. On direct laryngoscopy, fullness was seen in right ventricle with narrowing of laryngeal inlet.

Due to the inspiratory stridor patient was taken to the OT and an emergency tracheostomy was performed (Fig. 2). Subsequently a plain radiograph of the neck revealed a soft-tissue density shadow with air-fluid level (Fig. 3). Repeated aspiration with wide bore needle was done which revealed purulent discharge and the patient was treated with broad spectrum antibiotics. Features of toxicity were subsided. CT-scan of the neck revealed air filled cavity communicating with ventricle (Fig. 4).

After anesthetic check-up the operation was carried out under GA. A collar incision was made at the level of thyroid cartilage and skin flaps including the platysma were elevated upto the hyoid bone superiorly and down to the lower border of the thyroid cartilage. The strap muscles were divided at their attachments to the thyroid cartilage for adequate access. A perichondrial flap was then elevated by

Fig. 1 Tense tender neck swelling

Fig. 2 Patient after tracheostomy

incising along the superior border of the thyroid cartilage to the thyroid notch on the right side, then down the mid-line and along the lower border of thyroid cartilage laterally. A portion of the right thyroid cartilage was fractured downwards to gain access to the laryngeal part of the sac. The recurrent laryngeal nerve was identified. The entire cyst was excised and the wound was closed in layers. The perichondrial flap was sutured to the remains of the thyrohyoid membrane and neck wound was closed in layers leaving a drain. The post-operative period was uneventful.

Fig. 3 X-ray neck shows a soft tissue density with air-fluid level. On histopathology, the cyst was lined by ciliated pseudostratified columnar epithelium

Fig. 4 CT Scan of neck showing air-filled cavity connecting with ventricle of larynx

Discussion

The laryngeal ventricle was first described by Galen (1822) and Morgagni (1841) described the anatomical features more completely and it now bears his name (Arjun Das et al, 1992). Since laryngeal air sacs are normal anatomical findings in many animals, the presence of a dilated laryngeal ventricle in man is regarded by several authors as an atavistic phenomenon, illustrating developmental changes of evolutionary degeneration.

Negus (1929) gives detailed description of the various types which are found in different animals. He felt that the purpose of those large air sacs, like the buccal sacs in frogs, the large external laryngeal sacs in apes, or the abdominal sacs in birds, is to serve as a re-breathing apparatus, enabling the animal to hold its breathe longer. Watkins (1935) suggested that the laryngeal ventricle may represent a remnant of the large extra-laryngeal sacs of some anthropoid apes.

Laryngocoele is an extremely rare condition. Approximately two out of three laryngocoeles are unilateral and they may be combined, external (30%) or internal (20%) or combined (50%) (Maran,1975). In our series all the three cases were unilateral and the case 3 was combined type. It is more common in males as in present report but no explanation has been found for the male predominance. It has long been held that laryngocoeles are due to hobbies or jobs involving blowing under pressure but this theory has not been proved beyond dispute though the reporting case 3 was a singer by profession. About 8% of laryngocoeles become infected and present as pyocoele (Stell, 1975) as found in case 3.

The commonest presenting symptoms are hoarseness and a lump in the neck with almost equal frequency. But it may present with sore throat, pain, dysphagia, stridor and snoring (Arjun Das et al, 1992). The case 1 and 3 had large swelling in the neck. Sometimes it may be asymptomatic also. In case 2 the presenting complain was hoarseness of voice without any neck swelling and diagnosis was done by plain X-ray neck with and without Valsalva manoeuvre.

Table 1 Analysis of the three cases

Pt. age/sex	Symptoms/sign	Radiology	Treatment	H/P
1). 49/Male	Neck swelling/RT. Sided soft, cystic neck swelling which increased on Valsalva's manoeuvre.	An air filled cavity on plain x-ray neck.	Surgical excision of the sac by external approach	Ciliated pseudostratified columnar epithelium.
2). 46/Male	Hoarseness of voice./ NAD	An air filled cavity on Valsalva's manoeuvre.	Patient refused to undergo surgery.	
3). 65/Male	Neck swelling, respiratory distress/RT. Sided tense, tender neck swelling with inspiratory stridor. On IDL fullness rt. Ventricle	On plain X-ray soft tissue density with air fluid level. CT scan of the neck revealed air filled cavity communicating with larynx.	Tracheostomy was done. Aspiration of the neck swelling followed by excision of the sac.	Ciliated pseudostratified columnar epithelium.

In case 3 the presenting features were respiratory distress with neck swelling and voice change. Laryngocoele or laryngopyocoele associated with stridor is very rare clinical entity. Stridor can come on very suddenly over a period of few days or even hours in a patient who had previously only mild symptoms for months or years (Maran, 1975).

In Broyles (1959) study of 50 laryngeal specimens, 10 had enlarged bilateral saccules and 5 had enlarged unilateral saccule. Tucker and Smith (1962) have demonstrated enlargement of the saccules in a significant number of asymptomatic histological section of the entire larynx.

It is interesting to note that the incidence of carcinoma of the larynx in association with laryngocoele is relatively high. Leborgne (1940) reported that the incidence of laryngocoele associated with cancer of the larynx may be as high as 10–15%. Stell and Maran (1975) reported 7 cases of carcinoma and 2 cases of papilloma of larynx out of 139 cases of laryngocoeles. But we didn't encounter any case of carcinoma in the excised specimen.

Conclusion

Laryngocoele or laryngopyocoele is a rare clinical entity. Besides neck swelling, hoarseness of voice patients may present with stridor. Patient with hoarseness of voice of

long duration with normal vocal cords should have a plain AP neck X-ray with and without Valsalva's manoeuvre to diagnose smaller laryngocoele. Recurrence after surgery is uncommon.

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