Laryngocoele causing airflow obstruction—a case report and summary of clinical manifestations in five other patients

J. BANKS*
M.B., M.R.C.P.

B. R. DAVIS†
M.B., B.Sc., F.R.C.S.

R. D. H. MONIE‡
M.B., B.Sc., M.R.C.P.

*Llandough Hospital, Nr. Penarth, South Glamorgan CF6 1XX, †University Hospital of Wales, Heath Park, Cardiff CF4 4XW and ‡Department of Tuberculosis and Chest Diseases, Welsh National School of Medicine, Llandough Hospital, Penarth, South Glamorgan CF6 1XX

Summary

We present six patients with laryngocoeles, one of whom presented as an emergency to a Chest Unit. A swelling in the neck was present in five, two patients had hoarseness progressing to stridor and three complained of dysphagia. No underlying cause was found in any of the patients. Surgical management was necessary in five with good results.

KEY WORDS: stridor, tracheostomy, dysphagia.

Introduction

A laryngocoele is an abnormal dilatation of the ventricular sacculus of the larynx, normally a vestigial structure in man. The majority are probably asymptomatic and go unrecognized (Ballantyne, 1979), but symptoms of breathlessness, cough, hoarseness and stridor may develop. We report a patient referred to a Chest Unit in whom laryngocoele was diagnosed and who required emergency tracheostomy. Five other patients with laryngocoeles are summarized to illustrate some of the ways in which the condition may present.

Case report

A 57-year-old animal keeper gave a 6-week history of hoarseness and dyspnoea. Examination revealed a soft ill-defined mass in the right anterior triangle of the neck which increased in size during a Valsalva manoeuvre. Twenty-four hours after admission, his dyspnoea became worse with marked stridor developing over 30 min. There was, however, a sudden and complete spontaneous resolution of his symptoms and disappearance of the swelling.

‡Present address: Southern General Hospital, Glasgow.

Laryngeal tomograms demonstrated a combined laryngocoele (Fig. 1) the internal component projecting into the lumen of the supraglottis and laryngoscopy confirmed the laryngocoele.

FIG. 1. Laryngeal tomogram in patient described showing combined laryngocoele on the right. (I = Internal component displacing false cord medially into laryngeal lumen and expanding laterally through thyrohyoid membrane to produce external component-e).

The patient declined any further treatment and remained asymptomatic for 3 months, but was then re-admitted with recurrence of dyspnoea and stridor which did not resolve and necessitated emergency

TABLE 1. Clinical details and management of five patients with laryngocoeles

Age (years)	Sex	Presenting symptoms	Duration of symptoms	Signs	Treatment	Outcome
36	F	Hoarseness and cough progressing to stridor necessitating tracheostomy	9 months	None	Excision	Well
21	M	Dysphagia	6 months	Swelling in neck	Excision	Well
68	M	None	3 months	Swelling in neck	None	Well
27	M	Dysphagia	12 months	Neck swelling	Excision	Died 5 years later—no recurrence of laryngocoele
71	M	Dysphagia	5 years	Painful swelling in neck	Excision	Well

tracheostomy. His laryngocoele was subsequently excised by an external approach to the thyrohyoid membrane through which the fundus of the sac protruded. Large amounts of pus were found within the sac, the lining of which consisted of ciliated respiratory epithelium. Postoperative recovery was uneventful and he has since remained well.

Five other cases were seen in Cardiff and Newport over a 12-year period (Table 1). One of these other patients also presented with respiratory symptoms, three with dysphagia and one was asymptomatic. A Valsalva manoeuvre enlarged the size of the swelling in each case (Fig. 2a & b). The diagnosis was made by laryngeal tomography and laryngoscopy. Three patients had their laryngocoeles excised shortly after presentation, but one had recurrent symptoms for 5 years before excision. Ciliated respiratory epithelium was found on histology in three whilst in the other chronic suppuration precluded histological classification. One patient has since died from unrelated causes and at necropsy there was no recurrence of the laryngocoele. The fifth patient who had a painless cervical swelling has remained well following diagnosis for 3 years without treatment.

Discussion

Although the number of symptomatic laryngocoeles reported in the literature has increased in recent years the incidence of asymptomatic laryngocoeles is probably higher (Ballantyne, 1979; Lindell *et al.*, 1978), about 6% of patients at necropsy having internal laryngocoeles (Iversen and Vesterhauge, 1978). Men are more often affected than women but the reasons for this remain unexplained.

They are classified as either internal when confined to within the laryngeal lumen, external when they

extend through the thyrohyoid membrane, or combined when exhibiting features of both.

The initial case we describe presented to a Chest Unit because of stridor and dyspnoea and one other case had similar symptoms. Symptoms when present depend upon the type of laryngocoele. Internal laryngocoeles can produce hoarseness secondary to impaired vocal cord movement. Encroachment into the laryngeal lumen may cause airflow obstruction and reflex cough which may progress to stridor. External laryngocoeles may present as a cystic swelling in the neck anterior to the sternomastoid muscle. Symptoms may fluctuate and show spontaneous resolution over short periods of time but may develop rapidly and produce laryngeal obstruction and suffocation, a complication more likely to occur if super-added infection gives rise to a laryngopyocoele (Palle, Iversen and Vesterhauge, 1975). Such a course of events was seen in the patient described who required emergency tracheostomy.

Raised intraglottic pressure has been implicated as an important factor in the pathogenesis since certain occupations, such as glass blowing or playing of wind instruments, seem to predispose to the development of laryngocoeles (Holinger *et al.*, 1978). Whether the raised intraglottic pressure acts upon a congenitally pre-formed sac or previously normal saccule remains controversial. Controversy has also surrounded the relationship between laryngocoeles and endolaryngeal carcinoma. In reports by Meda (1952) and Pietrantonio, Felisati and Finzi (1959) of patients with laryngeal carcinoma, laryngocoeles were found in 4% and 6% of patients respectively, the incidence being no higher than found in the normal population. Both reports were based on radiographic studies. However, Micheau *et al.* (1978) found laryngocoeles in 18% of surgically resected laryngeal cancer specimens. The

FIG. 2a and b. External laryngocoele made apparent by Valsalva manoeuvre. Old tracheostomy scar also visible following diphtheria in childhood.

diagnosis was established in their series by direct systematic measurement of the ventricular depth in the resected specimens. However, none of our patients had any aetiological factor that allegedly predisposed to laryngocoele.

The diagnosis can usually be established radiographically either by plain antero-posterior and lateral X-rays of the neck or on laryngeal tomography. In addition, direct laryngoscopy is mandatory to exclude a co-existent neoplasm.

Treatment is by surgical excision which should be performed in all symptomatic cases since life-threatening symptoms can develop quite dramatically and often unexpectedly. The approach through the thyrohyoid membrane with lateral laryngofissure has now replaced other methods as it spares the vocal cords from trauma. Treatment of bilateral laryngocoeles can be hazardous as the superior laryngeal nerves and vessels may be damaged at operation, an event that would lead to the likelihood of recurrent aspiration to the lower respiratory tract.

Acknowledgments

We would like to thank the Consultant ENT Surgeons at the University Hospital of Wales, Cardiff, and The Royal Gwent

Hospital, Newport for allowing us access to the case notes of the patients and for the helpful advice they gave during the preparation of this paper, and also Mrs A. Howard and Mrs P. Davies for their secretarial assistance.

References

- BALLANTYNE, J. (1979) *Scott-Brown's Diseases of the Ear, Nose and Throat*, Vol. 4, 4th edn. p. 428. Butterworth Press, London.
- HOLINGER, L.D., BARNES, R.D., SMID, L.J. & HOLINGER, P.H. (1978) Laryngocoele and saccular cysts. *Annals of Otolaryngology*, **87**, 675.
- IVERSEN, P.B. & VESTERHAUGE, S. (1978) A fatal case of laryngocoele with cancer of the larynx. *Journal of Laryngology and Otology*, **92**, 163.
- LINDELL, M.M., JING, B., FISCHER, E.P., GUILLANMONDEGUI, O.M. & WALLACE, S. (1978) Laryngocoele. *American Journal of Roentgenology*, **131**, 259.
- MEDA, P. (1952) Symptomatic laryngocoeles in cancer of the larynx. *Archives of Otolaryngology*, **56**, 512.
- MICHEAU, C., LUBOINSKI, B., LANCHI, P. & CACHIN, Y. (1978) Relationship between laryngocoeles and laryngeal carcinomas. *Laryngoscope*, **88**, 680.
- PALLE, B., IVERSEN, P.B. & VESTERHAUGE, S. (1975) Three cases of suffocation resulting from laryngocoele. *Ugeskrift for Laeger*, **139**, 730.
- PIETRANTONI, L., FELISATI, D. & FINZI, A. (1959) Laryngocoele and laryngeal cancer. *Annals of Otolaryngology, Rhinology and Laryngology*, **68**, 100.

(Accepted 15 April 1983)