

Two Cases of Asymptomatic Epiglottic Cyst Confirmed by Lateral Cervical Roentgenogram

Toshiyuki YOSHIYAMA, Katsuya MIKAWA, Nobuhiro MAEKAWA,
Osamu TANAKA, Ryokichi GOTO,
Hideaki YAKU and Hidefumi OBARA

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Asymptomatic epiglottic cyst is a rare complication occasionally encountered at the induction of anesthesia. However, it is potentially dangerous because it may obstruct the airway and the anesthesiologist's view of the larynx¹. It is difficult to predict the cyst and plan for management of a difficult intubation. We report two cases of asymptomatic epiglottic cyst discovered incidentally at the induction of general anesthesia and confirmed by lateral cervical roentgenogram.

Case Report

Case 1

A 75-year-old, 51 kg woman was scheduled for the operative removal of brain tumor. Her medical history revealed no respiratory symptoms with daily activities. Preoperative chest radiography and routine laboratory tests were normal. She was premedicated with atropine, 0.5 mg intramuscularly (i.m.), and diazepam, 5 mg orally, and anesthesia was induced with thiopental, 5 mg·kg⁻¹, and vecuronium, 0.2 mg·kg⁻¹, intravenously (i.v.). Following induction of anesthesia, ventilation was controlled easily via a mask. On laryngoscopy, however, the

larynx was not visible because a large, pale, smooth cyst filled the orifice of the larynx and obscured the view of both vocal cords. The cyst, which could not be lifted out of the way with the laryngoscope blade, also completely obstructed the view of the epiglottis. After several unsuccessful attempts at intubation by a resident, retrograde nasotracheal intubation was performed successfully with a cuffed tube (6.0 mm internal diameter) by a staff anesthesiologist, because external appearance of neck was normal and cricothyroid ligament was palpable. At induction, there was an episode of severe hypertension and tachycardia because of sympathetic activation by multiple trial of laryngoscopy requiring urgent administration of propranolol. We judged that removal of the epiglottic cyst had priority over excision of the brain tumor because there was danger that the untreated cyst might cause unexpected airway obstruction following extubation and because the brain tumor was benign meningioma. Therefore, the scheduled operation for meningioma was postponed.

During the removal of the cyst performed by an otolaryngologist, direct laryngoscopy demonstrated a large cyst, approximately 3 cm in diameter, arising from the lingual surface of the epiglottis and almost occluding the airway. Nothing could be aspirated from the cyst by using a 20-gauge needle and syringe. Following incision of the cyst,

Department of Anaesthesiology, Kobe University School of Medicine, Kobe Japan

Address reprint requests to Dr. Mikawa: Department of Anaesthesiology, Kobe University School of Medicine, Kusunoki-cho 7, Chuo-ku, Kobe, 650 Japan



Fig. 1. Lateral radiograph of head and neck regions in case 1. Arrow indicates a large cyst in the laryngeal cavity.



Fig. 2. Lateral cervical radiograph taken with the patient erect showing clearly a ptotic epiglottic cyst on inspiration (arrow) in case 2.

mucous material, creamy yellow in color, was discharged. Although the cyst collapsed, adequate visualization of the larynx was impossible because of the deflated folds of the cystic mass. The cyst and its wall were removed from the lingual side of the epiglottis. Both the epiglottis and vocal cords were then exposed and appeared normal. After recov-



Fig. 3. Anteroposterior view of the neck region cannot distinctly demonstrate the epiglottic cyst (arrow) in case 2; its shadow overlaps that of cervical vertebrae.

ery from anesthesia, the trachea was uneventfully extubated in the operating room with a satisfactory airway. Subsequently a close inspection of the preoperative lateral radiograph of the head and neck regions, which had not been checked by a resident at preoperative visit and examination, revealed a smooth supraglottic opacity (fig. 1).

Case 2

A 73-year-old, 58 kg man was scheduled for right lobectomy of the liver for hepatocellular carcinoma. His physical examination was unremarkable, including his head and neck, upper airway and pulmonary status. He was premedicated with 10 mg of diazepam by mouth and 0.5 mg of atropine, i.m., and anesthesia was induced with thiopental, 5 mg·kg⁻¹ i.v., followed by vecuronium, 0.2 mg·kg⁻¹, i.v. Although there was no difficulty in manually ventilating the lungs via a mask, the glottis could not be exposed by laryngoscopy because a large cyst originating from the right side of the epiglottis, approximately 4 cm in diameter, obstructed the view of the larynx. After two unsuccessful attempts at intubation by a resident, a cuffed tube (7.0 mm internal diameter) was successfully intubated orally by a staff anesthesiologist without adequate visualization of the larynx. During induction, the patient had severe hypertension requiring a vasodilator, nicardipine, because

Table 1. Asymptomatic epiglottic cyst discovered at the induction of general anesthesia

Author	Age	Size	Anesthetic Agents Used for Induction	Ventilation via Mask	Intubation	Scheduled Surgery
Keeleyside	48	8 cm	thiopental, succinylcholine	difficult	impossible	removal of esophageal foreign body (postponed)
Padfield	63	like walnut	thiopental, succinylcholine	easy	performed by standard technique	abdominal surgery (performed)
Mason -1-	55	4-5 cm	thiopental, succinylcholine	difficult	performed after aspiration of cyst	inguinal herniation (performed)
Mason -2-	51	3-4 cm	methohexital	difficult	impossible	dental clearance (postponed)
McHugh	22	unknown	thiopental, succinylcholine	easy	performed with g.e.b.	operation for lacerations of wrists (performed)
Yoshiyama -1-	75	3 cm	thiopental, vecuronium	easy	performed by retrograde	removal of brain tumor (postponed)
Yoshiyama -2-	73	4 cm	thiopental, vecuronium	easy	performed by standard technique	right lobectomy of liver (performed)

g.e.b.: gum elastic bougie

of several trials of laryngoscopy and intubation. The operation proceeded uneventfully. The trachea was extubated in the operating room after the patient regained consciousness. The postoperative course was uneventful and he developed no episode of upper airway obstruction or respiratory distress. Postoperative lateral radiograph of the neck region revealed a smooth rounded opacity arising from the epiglottis (fig. 2) whereas the anteroposterior view of cervical radiograph could not clearly show a shadow of the cyst. (fig. 3)

Discussion

Epiglottic cysts, found at any age, are considered to be benign lesions in otolaryngology^{1,2}. However, they may cause life-threatening airway obstruction. Davis reported a patient who died at induction of general anesthesia despite an emergency tracheotomy³. Although most epiglottic cysts present mild symptoms such as hoarseness, change in voice, and sensation of a lump in the throat⁴, a few cases demonstrate no symptoms. In addition, asymptomatic epiglottic cysts cannot be diagnosed by simple observation of the oral cavity and may be easily overlooked. Although Padfield reviewed four cysts out of 5,000

laryngoscopies³, the incidence of symptomless epiglottic cysts is very difficult to assess. It is further difficult to identify them prior to anesthetic induction in patients who do not complain of difficulty in swallowing, breathing or any other respiratory symptoms. They may not be anticipated based on the findings of the preoperative routine examinations. In the last twenty years, five cases of asymptomatic epiglottic cyst identified at induction of general anesthesia have been reported⁵⁻⁸. Table 1 summarizes seven cases including our two cases. In only two cases out of seven, endotracheal intubation could be performed with a standard technique⁵, and other cases either required specialized procedures or techniques, or were impossible to intubate. In three cases out of seven, the patients presented with airway obstruction immediately after loss of consciousness, and manual ventilation via a mask was difficult because of the ball-valve effect of the cyst^{6,7}.

Although the anteroposterior view of the radiograph of the neck region may not reveal an epiglottic cyst, a lateral cervical radiograph can illustrate the outline clearly as indicated in our case. Should lateral radiograph containing cervical region be available preoperatively, caution must be exercised to examine the presence of a epiglottic cyst. It

may be useful for anesthesiologists to order, if possible, a lateral radiograph of the neck region preoperatively, because it can predict asymptomatic epiglottic cysts. Then several techniques and instruments can be prepared for the management of unexpectedly difficult tracheal intubation and life-threatening airway obstruction caused by the cyst. However, the uncommon occurrence and expense does not justify the lateral cervical radiograph involved in routine preoperative testing.

In conclusion, we emphasize that these problems, though infrequent, do arise in patients who are apparently normal and that anesthesiologists must be continually aware of the possibility of difficult intubation. Furthermore, we emphasize that anesthesiologists should be trained to overcome any airway problems with various skillful techniques.

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References

1. Asherson N: Large cysts of the epiglottis: a classification and case records. *J Laryngol* 71:730-743, 1957
2. Davis EDD: Cyst of the larynx. *J Laryngol* 38:473-476, 1923
3. Padfield A: Epiglottic cysts. A case report and review. *Anaesthesia* 27:84-88, 1972
4. Mason DG, Wark KJ: Unexpected difficult intubation. Asymptomatic epiglottic cysts as a cause of upper airway obstruction during anaesthesia. *Anaesthesia* 42:407-410, 1987
5. McHugh P: Cyst of epiglottis. *Anaesthesia* 44:522, 1989
6. Keenleyside HB, Greenway RE: Management of pre-epiglottic cysts: a report of nine cases. *Can Med Assoc J* 99:645-659, 1968
7. Henderson LT: Airway obstructing epiglottic cyst. *Ann Otol Rhinol Laryngol* 94:473-475, 1985
8. Singh AP, Malik MK: Cysts of the larynx. *J Laryngol Otol* 86:383-386, 1970