CASE REPORT

Acute airway obstruction due to retropharyngeal haematoma caused by a large fish bone in a patient with hypertension caused by a pheochromocytoma

Yan Wei,¹ Linda Jahreis,² Zhili Zhang,¹ Andreas E Albers²

¹Department of Otorhinolaryngology, Head and Neck Surgery, Zhejiang University, The First Affiliated Hospital of Medical School of Zhejiang University, Hangzhou, China

²Department of Otorhinolaryngology, Head and Neck Surgery, Charité-Universitätsmedizin Berlin, Berlin, Germany

Correspondence to

Dr Andreas E Albers,
andreas.albers@charite.de

Accepted 12 February 2015

SUMMARY

Retropharyngeal haematoma (RH) is an extremely rare but potentially life-threatening condition that requires an early diagnosis and immediate management. Acute complications arise from compression and obstruction of the upper airway and oesophagus with the risk of consecutive aspiration. We present the case of a 48-year-old man with formation of a RH after accidental ingestion of a large fish bone with hypertension as comorbidity caused by a so far undiagnosed pheochromocytoma. The patient presented with acute onset of retropharyngeal pain, dysphonia and dysphagia secondary to fish bone foreign body ingestion. His medical history was significant for uncontrolled hypertension. CT showed a large RH extending from the oropharynx to the superior mediastinum. The patient underwent emergency tracheostomy, surgical debridement and removal of the fish bone. Antihypertensive medication was utilised to control his labile blood pressure. The postoperative CT scan revealed an adrenal pheochromocytoma that was subsequently resected.

BACKGROUND

RH is a rare but potentially life-threatening condition.^{1 2} A broad spectrum of causes has been reported in the literature. These range from spontaneous formation with and without anticoagulation^{3–8} to haematoma due to minor cervical trauma, iatrogenic events as well as various non-traumatic cases that include parathyroid adenoma, and haematoma secondary to aortic aneurysm rupture.

Clinically, the condition may manifest as sore throat, shortness of breath, dysphonia, dysphagia and neck swelling, which can precede lethal airway obstruction.

We present the case of a patient with formation of a large haematoma caused by a retropharyngeal lesion after ingestion of a large fish bone. Owing to high uncontrolled blood pressure, a haematoma extending from the oropharynx to the upper mediastinum had formed, which resulted in compression of the alimentary tract and the airway (supraglottic space). In light of the current literature, we discuss the diagnostic and treatment strategies.

To the best of our knowledge, this is the first case report of a lodged fish bone and adrenal pheochromocytoma as the aetiology of RH.

CASE PRESENTATION

A 48-year-old man was referred to the emergency department with a history of accidental fish bone

ingestion 22 h earlier. When drinking the remains of a fish-soup made with coconut milk from a bowl, he accidentally swallowed a grass-carp fish bone concealed in the white liquid that then became stuck in his throat. The following attempts to remove the fish bone by self-induced vomiting and by eating rice had failed. At presentation, he reported of initial odynophagia and hoarseness that was progressing to severe dysphagia and dyspnoea.

Other than a history of unstable hypertension that was being treated with nifedipine (5 mg/day), he was healthy with no history of any pre-existing disease, or of smoking or alcohol abuse.

INVESTIGATIONS

On initial physical examination, the patient presented with reduced but stable vital signs. He was afebrile with a blood pressure of 178/104 mm Hg. However, he showed orthopnoea, and the initial SpO₂ as measured by pulse oximetry was fluctuating between 85% and 95%, which was temporarily stabilised over 90% by supplying oxygen through a mask.

The haematological profile and coagulation tests showed normal results. Oropharyngeal examination revealed a large swelling of the retropharyngeal wall. Further fiberoptic examination of the larynx and pharynx by an otorhinolaryngologist showed significant anterior bulging of the posterior pharyngeal wall with reddish discolouration, and ecchymosis of the mucosa together with accumulated saliva severely obstructing the airway. The swelling of the posterior hypopharyngeal wall could be passed with a 4 mm flexible endoscope, which, below the larynx and the visible upper part of the trachea, showed a normal anatomy. Owing to the swelling, swallowing was impossible and the patient had to remove excess saliva by continuous spitting.

For further diagnostics, lateral cervical radiography was performed, which revealed a marked prevertebral soft-tissue swelling with extension into the mediastinum; however, neither the fish bone nor any other foreign body could be located (figure 1). To assess the full extension of the swelling, and to learn about its nature and cause, a CT scan of the neck and thoracic area was performed, which revealed a huge, low-density collection of fluid in the retropharyngeal space extending from the oropharynx to the superior mediastinum compressing the upper airway, hypopharynx and oesophagus (figure 2). Moreover, approximately at the level of the vocal cords, a foreign body protruding into the lesion was found.

CrossMark

To cite: Wei Y, Jahreis L, Zhang Z, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-208644

Figure 1 Lateral view X-ray shows areas of mixed opacity and translucency extending from the base of the skull to the level of the fifth cervical spine (C5). A swelling of the soft tissue and a widening of the prevertebral space with the laryngeal air column almost obliterated and an anterior displacement of the airway is visible.

DIFFERENTIAL DIAGNOSIS

Lymphoma, laryngocele, cyst, emphysema, carcinoma and an abscess are possible differential diagnoses.

TREATMENT

As response to the progressing symptoms, intensive care monitoring, and treatment with intravenous corticoids and antibiotics (second generation cephalosporin and metronidazole) were immediately started. As response to the severe dyspnoea with an immediate risk of respiratory exhaustion and failure, the decision to secure the airway by an emergency tracheostomy under local anaesthesia was made over the alternative of an awake fiberoptic intubation. Subsequently, under full anaesthesia, a lateral cervical approach by a head and neck surgeon to the

retropharyngeal and prevertebral space was used to explore the swelling, which was caused by a haematoma extending from oropharynx to the superior mediastinum (figure 3A). After removal of the blood clot, no further bleeding was observed and before wound closure vacuum-drainages were placed to reduce dead space, and to prevent a recurrence (figure 4). Next, rigid laryngopharyngoscopy was performed and the fish bone protruding from the posterior wall of the hypopharynx corresponding to imaging results (figure 3B) could be located and extracted. Finally, a nasogastric tube was placed.

OUTCOME AND FOLLOW-UP

The postoperative course was uneventful. The throat pain and swelling resolved during the first 5 days and the nasogastric tube could be removed on day 5. The drainage tubes remained in situ for 7 days, since a significant amount of fluid was still being drained. We attributed this to the fact that, postoperatively, the patient suffered from high blood pressure peaks. A follow-up CT-scan 5 and 10 days after surgery revealed that the retropharyngeal swelling had almost completely disappeared, and

Figure 2 Axial CT of the neck showing a heterogeneous retropharyngeal mass compressing the upper airway and oesophagus.

Figure 3 (A) Blood clot removed from the retropharyngeal hematoma cavity. (B) Photograph of a 4 cm fish bone that caused the retropharyngeal hematoma and that was removed from the posterior wall of the hypopharynx.

Figure 4 Lateral view into the retropharyngeal space after transcervical drainage of the haematoma. The two tubes with negative pressure were placed into the haematoma cavity for further drainage.

subsequently the patient was successfully decannulated and the tracheostomy was closed.

Meanwhile, diagnostic workup of the unstable hypertension led to the diagnosis of an adrenal pheochromocytoma, which was resected in the department of urology. The patient was finally discharged in good health 20 days after initial presentation.

DISCUSSION

This article presents a case of chronically uncontrolled hypertension and fish bone ingestion as the cause of a haematoma in the retropharyngeal space and consecutive airway-compression. RH is a rare entity with a potential for fatal outcome owing to progressive internal blood loss and airway obstruction.^{9–11}

The retropharyngeal space is located posterior to the buccopharyngeal fascia surrounding the pharynx, anterior to the prevertebral fascia of the cervical and thoracic spine, and extends laterally to the carotid sheaths. It begins at the base of the skull and terminates in the superior mediastinum.^{9–12} Bleeding into the retropharyngeal space is a serious condition because of the anatomic peculiarity of the pharyngeal muscles, of which insertions move toward their origins. Therefore, anatomical communication of the retropharyngeal space with the mediastinum allows accumulation of a large amount of blood, potentially without significant neck swelling. Laryngoscopy usually shows pharyngolaryngeal swelling with no sign of the source of bleeding, leading to an initial tentative diagnosis of laryngitis or abscess.

The classical manifestations of RH are referred to as ‘Capp’s triad’ and include the compression of the trachea and oesophagus, displacement of the trachea anteriorly and subcutaneous bruising over the neck.¹³ However, in some cases of RH, clinical signs are related to airway compression, and include dysphagia and dysphonia, which may progress to dyspnoea and upper respiratory failure, without subcutaneous bruising.

Most documented causes of RH have occurred in the context of cervical fractures, violent coughing, ruptured aneurysm, pharyngeal foreign bodies, injury of cervical blood vessels, vomiting, muscular exercise, deep neck infection, haemorrhagic parathyroid adenoma, iatrogenic injury associated with cardiac catheterisation, cerebral angiography and jugular vein cannulation, spontaneous haemorrhagic with or without anticoagulation therapy, flexion and hyperextension of the neck (fall,

motor vehicle accident or airbag deployment) with contusion,^{6–8, 14–17} and laceration of the soft tissues and vessels.⁷ Anticoagulation and coagulopathic states are important risk factors.^{18–19}

Our patient’s haematoma was most likely caused by an injury to a blood vessel in the retropharyngeal space. Although the source of the bleeding was not identified, it is our belief that the cause of bleeding originated from the injury to a blood vessel by the fish bone, and the blood vessel continued to bleed due to a state of uncontrolled hypertension.

Pheochromocytoma is considered to be a rare cause of hypertension. It may lead to fatal hypertensive crises during anaesthesia and other stresses.²⁰ In this case, the hypertension caused by the pheochromocytoma led to progression of the swelling and suffering from the early symptoms of air obstruction caused by bleeding.

Learning points

- ▶ Although the treatment course may vary depending on the aetiology of the haematoma, the first step in management is establishing definitive airway control.²¹
- ▶ There is no consensus in the literature regarding the optimal treatment of retropharyngeal haematomas.
- ▶ Prudent treatment is necessary to avoid airway obstruction, including close observation and monitoring in an intensive care unit, endotracheal intubation or tracheotomy as necessary.
- ▶ Under most circumstances, conservative therapy including observation and antibiotic coverage has been recommended.⁶ These patients should be followed radiographically to ensure complete resolution of the haematoma.^{10–21}

Funding National Natural Science Foundation of China (NSFC, 81441030); Research Fund for the Doctoral Program of Higher Education (J20131460); Research Fund for the Health Commission Zhi Jiang Province (JSW2013-A020).

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Mitchell RO, Heniford BT. Traumatic retropharyngeal hematoma—a cause of acute airway obstruction. *J Emerg Med* 1995;13:165–7.
- 2 Chin KM, Sidhu JS, Janssen RS, *et al.* Invasive cervical cancer in human immunodeficiency virus-infected and uninfected hospital patients. *Obstet Gynecol* 1998;92:83–7.
- 3 Nurata H, Yilmaz MB, Borcek AO, *et al.* Retropharyngeal hematoma secondary to whiplash injury in childhood: a case report. *Turk Neurosurg* 2012;22:521–3.
- 4 Inokuchi G, Kurita N, Baba M, *et al.* Retropharyngeal hematoma from parathyroid hemorrhage in a hemodialysis patient. *Auris Nasus Larynx* 2012;39:527–30.
- 5 Kang SS, Jung SH, Kim MS, *et al.* Spontaneous retropharyngeal hematoma—a case report. *Korean J Pain* 2010;23:211–14.
- 6 Duvillard C, Ballester M, Romanet P. Traumatic retropharyngeal hematoma: a rare and critical pathology needed for early diagnosis. *Eur Arch Otorhinolaryngol* 2005;262:713–15.
- 7 Akoglu E, Seyfeli E, Akoglu S, *et al.* Retropharyngeal hematoma as a complication of anticoagulation therapy. *Ear Nose Throat J* 2008;87:156–9.
- 8 Ophir D, Bartal N. Retropharyngeal hematoma following fish-bone ingestion. *Ear Nose Throat J* 1988;67:528–30.
- 9 Tenofsky PL, Porter SW, Shaw JW. Fatal airway compromise due to retropharyngeal hematoma after airbag deployment. *Am Surg* 2000;66:692–4.
- 10 El Kettani C, Badaoui R, Lesoin FX, *et al.* Traumatic retropharyngeal hematoma necessitating emergency intubation. *Anesthesiology* 2002;97:1645–6.

- 11 Sandooram D, Chandramohan AR, Radcliffe G. Retropharyngeal haematoma causing airway obstruction: a multidisciplinary challenge. *J Laryngol Otol* 2000;114:706–8.
- 12 Williams SR. Airway management for a retropharyngeal hematoma. *J Emerg Med* 1995;13:243–4.
- 13 al-Fallouji HK, Snow DG, Kuo MJ, *et al*. Spontaneous retropharyngeal haematoma: two cases and a review of the literature. *J Laryngol Otol* 1993;107:649–50.
- 14 Iizuka S, Morita S, Otsuka H, *et al*. Sudden asphyxia caused by retropharyngeal hematoma after blunt thyrocervical artery injury. *J Emerg Med* 2012;43:451–6.
- 15 Birkholz T, Krober S, Knorr C, *et al*. A retropharyngeal-mediastinal hematoma with supraglottic and tracheal obstruction: the role of multidisciplinary airway management. *J Emerg Trauma Shock* 2010;3:409–11.
- 16 Tsai SH, Hsu CW, Chu SJ. Traumatic retropharyngeal hematoma after a minor head injury. *J Trauma* 2008;64:539.
- 17 Rotter N, Jager L, Wollenberg B, *et al*. [Spontaneous retropharyngeal hematoma: a rare differential diagnosis of acute dysphagia]. *HNO* 2008;56:981–4.
- 18 Gurr DE, Walls RM. Anti-coagulation and spontaneous retropharyngeal hematoma. *J Emerg Med* 2003;24:469–70.
- 19 Bapat VN, Brown K, Nakas A, *et al*. Retropharyngeal hematoma—a rare complication of anticoagulant therapy. *Eur J Cardiothorac Surg* 2002;21:117–18.
- 20 Widimsky J Jr. Recent advances in the diagnosis and treatment of pheochromocytoma. *Kidney Blood Press Res* 2006;29:321–6.
- 21 Tsai KJ, Huang YC. Traumatic retropharyngeal hematoma: case report. *J Trauma* 1999;46:715–16.

Copyright 2015 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow