Available online at www.elixirpublishers.com (Elixir International Journal)

Physiology and Anatomy

Elixir Physio. & Anatomy 145 (2020) 54713-54715

ISSN: 2229-712X

The Diagnosis and the Management of an Iatrogenic Esotracheal Fistula: A Case Report

Abdelhalim Boucaid[1], Adil Zegmout[1], Younes Amchich [1], Nawal Mourdi [1], Nezha Rguig [2], Hicham Souhi[1], Hanane El Ouazzani[1], Ismail Rhorfi[1], Ahmed Abid [1]

[1]Pulmonology Department, Military Hospital Mohammed V, Faculty of Medicine and Pharmacy, University Mohammed V, Rabat.

[2]Pulmonology Department, Moulay Youssef Hospital, Faculty of Medicine and Pharmacy, University Mohammed V, Rabat.

ARTICLE INFO

Article history:
Received: 10 July2020;
Received in revised form:
10 August 2020;
Accepted: 19 August 2020;

Keywords
Eso-tracheal fistula,
Diagnosis,
Intubation,
Treatment.

ABSTRACT

Benign tracheoesophageal fistula is a rare clinical entity and a rare complication of prolonged intubation and tracheostomy, we report the case of 20-year-old woman with a tracheoesophageal fistula secondary to mechanical ventilation. Ventilation difficulties and the recurrent lung infections were the mean symptoms, Early diagnosis was confirmed by bronchoscopy then the patient underwent a surgical repair of the fistula and interposition of a muscle flap. Acquired nonmalignant tracheoesophageal fistula is a preventable disease but this complication can still occur. The surgical treatment remains the best option.

Introduction

Acquired eso-tracheal fistula (ETF) is a rare entity, affecting all age groups. Two types of fistulas can be distinguished: benign and malignant; benign acquired esotracheal fistulas are secondary to trauma, infection, rupture of the Zenker's diverticulum or prolonged intubation [1]. the diagnosis is bronchoscopic. Surgery remains the best treatment for benign acquired fistulas [2]. The ETF represents a clinical, paraclinical and surgical challenge.We report the observation of an acquired benign ETF secondary to a prolonged tracheal intubation.

Case report

A 20-year-old patient with no medical history, hospitalized in the intensive care unit for the management of a serious head trauma secondary to a public road accident; the injury assessment on admission showed a GLASCOW score of 8, the body scan revealed areas of bilateral pulmonary contusion; meningeal hemorrhage with axonal injuries. The rest of the exams were normal.The patient was intubated; ventilated and sedated, lately tracheotomized at D+7 with improvement in the GCS to 11.

At D+41 of his admission and following ventilation difficulties linked to the persistence of leaks, repeated inhalation pneumopathy and aspiration of gastric fluid through the tracheal tube, the diagnosis of eso-tracheal fistula was evoked. A cervico-thoracic CT scan (Figure 1) was performed, which revealed the esophageal-tracheal fistula.

The diagnosis was confirmed by bronchoscopy (figure 2). The eso-tracheal fistula was located at the cervical level with a longitudinal diameter of 1.2 cm and 15 cm from the dental arch.

The most likely diagnosis was that of a benign acquired esotracheal fistula secondary to prolonged intubation with mechanical ventilation. Our patient underwent surgery with intraoperative bronchial endoscopy.

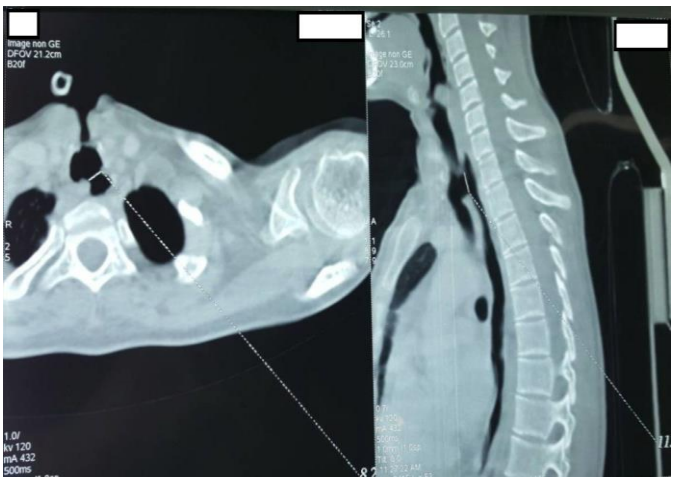

Figure 1.CT images showing the size and location of the esophageal-tracheal fistula.

Figure 2. CT images showing the size and location of the esophageal-tracheal fistula.

Tele:
E-mail address: abdelhalim.boucaid@gmail.com

The surgical procedure consisted of an esophageal fistula repair first after an anterior U-shaped cervicotomy and then repair of the tracheal fistula with an interposition of the sterno-hyoid muscle to strengthen both structures.

A Nasogastric tube was inserted and a Bronchoscopic control at D10 was satisfying.

However, despite a very wide-spectrum antibiotic therapy. The patient died at D15 with severe sepsis of abdominal and pulmonary origin.

Discussion

Acquired eso-tracheal Fistulae are relatively rare but fatal, the risk factors retained in ventilated patients are: an over-inflated balloon (over 30 mmH2O) [3], a positive endobronchial pressure regime during assisted ventilation, and the prolonged duration of intubation or tracheotomy.

However, acquired benign ETFs are favored and self-maintained by respiratory infections and the presence of a nasogastric tube.

As well as certain factors related to the patient that can make management difficult: elderly patients, female sex, serious condition requiring prolonged intubation, infection by multi-resistant germs, immunosuppression, diabetes, anaemia, metabolic disorders and hypotension [4]; malnutrition and finally the extent of the anatomical damage.

The incidence and extent of ETFs is correlated with the intubation time, while the patient health status factors are the major difficulties of the ETF management [5].

The treatment of ETF is essentially surgical, in 1973, Thomas et al, in a serie of 46 cases [9] showed that non-surgical treatment remains fatal, and spontaneous recovery is exceptional.

Sometimes less invasive endoscopic treatment (fibrin glue, small clips or argon plasma coagulation, dumon prosthesis) is discussed on a case-by-case basis, and may be feasible for small fistulas with good results [10,11], the possibility of using a double prosthesis such as a Dynamic stent and a covered expansive prosthesis in the esophagus or 2 covered expansive stents is also discussed.However, good preparation of the patient to bring him/her to the procedure in the best local and general conditions is recommended, otherwise any attempt to reconstruct the local anatomy remains hazardous [11].

Inhalation prevention is essential with a balloon inflated below the fistula and sometimes a temporary exclusion of the esophagus is possible in front of a giant fistula.

In general, the control of the pulmonary infection and a hypercaloric diet by parenteral injection or by jejunostomy associated with a discharge gastrostomy are imperative to avoid gastroesophageal reflux [12].

The treatment strategy should define the optimal time for surgical repair and the technique depends on the location and size of the fistula, Grillo et al recommend a single-step reconstruction in patients with spontaneous ventilation or who have been weaned off the ventilator, the Grillo reference technique consists of an anastomosis resection, especially in cases of giant fistula associated with severe tracheal dilapidation, with a collapsed side wall or in front of an already constructed stenosis [11].

For small fistulas, direct closure via a cervical approach, after the exposure and localization of the fistula, consists of a section-splitting of the fistula, which remains a delicate time, followed by suture of the esophagus (in two planes) and the trachea directly and by closing the breach with a flap of the sub-hyoid muscle.

Finally, an interposition of a sterno-hyoid or sterno-thyroid muscle flap is desirable to separate the repairs of the two sutures (tracheal and esophageal). For lower thoracic fistulas, a right lateral thoracotomy is the best approach and allows the interposition of the pleura or intercostal muscles between the esophageal and tracheal sutures.

In the immediate post-operative period, it is necessary to ensure that the deglutition process is not compromised.

Enteral nutrition is continued and the nasogastric tube is removed between the 1st and 7th day, according to the authors, feeding is resumed willingly in mixed texture for the first weeks, after an esophageal transit and a bronchoscopic control.

Surgery failure is possible and is mostly related to the patient's initial state and nutritional status, septic control, and complications such as tracheal stenosis the mortality rate remains between 3% and 10% [4,8,11,14] [4,8,11,14].

Conclusion

Acquired benign eso-tracheal fistulas are rare, requiring a precise assessment of the lesions, their treatment essentially surgical with conservative repair techniques, preferably in a single procedure, their prognosis depends essentially on the combination of local and general healing conditions.

References

1.Shah CP, Yeolekar ME, Pardiwala FK. Acquired tracheo-oesophageal fistula. J Postgrad Med 1994 ; 40 : 83-4.

2.Singhal SK, Virk RS, Dass A, Sandhu BS. Tracheo-esophageal fistula : New option in management. Indian Journal of Otolaryngology and Head & Neck Surgery.2006 July ; 58 (3) : 300-2

3.POURIAT JT, LEGOUT J,CHAMPLAUT G,CUPA M. Etude des pressions trachéales
transmises par les ballonets des sondes d'intubation , Ann Anesthesiol Fr 1977;18 : 223-228

4.Payne DK, Anderson WM, Romero MD, Wissing DR,Fowler M. Tracheoesophageal fistula formation in intubated patients. Risk factors and treatment with high-frequency jet ventilation. Chest 1990;98:161-4.

5.Muldur DS, Rubush JL. Complications of tracheostomy :relationship to long term ventilatory assistance. J Trauma 1969; 9:389-402.

6.Hilgenberg AD, Grillo MD. Acquired nonmalignant tra-cheoesophageal fistula. J Thorac
Cardiovasc Surg 1983;85:492-8.

7.Camilleri AE. Management of acquired tracheo-oesophageal fistula following intubation. J Laryngol Otol 1990; 104:267-9.

8.Thomas AN. Management of tracheoesophageal fistula caused by cuffed trachéal tubes. Am J Surg 1972;124:181-7.

9.Thomas AN. The diagnosis and treatment of tracheo-esophageal fistula caused by cuffed trachéal tube. J Thorac Cardiovasc Surg 1973;65:612-9.

10.Scappaticci E, Ardissone F, Baldi S et al. Closure of an iatrogenic tracheoesophageal fistula with bronchoscopic gluing in a mechanically ventilated adult patient. Ann Thorac Surg 2004 Jan ; 77 (1) : 328-9.

11.Yankovic F, Castillo C, Saenz R, Navarrete C. Endoscopic argon plasma coagulation in recurrent tracheoesophageal fistula. Clinical series and review of the literature. Gastro-enterol Hepatol 2009 Nov ; 32 (9) : 600-4. Epub 2009 Sep 8. Review.

12. Couraud L, Bercovici D, Zanotti L, Clerc P , Velly JF, Dubrez J. Traitement des fistules oesotrachéales de la réanimation (FOT) . Expérience de 17 cas. Ann Chir Thoracic Cardiovasc 1989 ; 43 : 677-681.

13.Mathisen DJ,Grillo HC, Wain JC, Hilgenberg AD. Management of acquired nonmalignant tracheo-esophageal fistula. Ann Thorac Surg 1991 ; 52 : 759-765.

14.Shaari CM, Biller HF. Staged repair of cervical tracheo-esophageal fistulae. Laryngoscope 1996;106:1398-402.