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Letters to the Editor

Management of Postintubation Tracheal Rupture in Pediatric Patients

Manejo de las roturas traqueales postintubación en pediatría

To the Editor:

Postintubation tracheal rupture is a rare complication that requires a high degree of clinical suspicion due to its high morbidity and mortality.[1] There is no current consensus on surgical or conservative treatment. We report 2 cases of postintubation tracheal rupture that responded favorably to conservative treatment.

The first patient was a 12-day-old boy who presented with desaturation and bradycardia, chest hyperinflation, and subcutaneous emphysema, following surgery to correct transposition of the great vessels. An anteroposterior chest x-ray showed massive bilateral pneumothorax. Fiberoptic bronchoscopy revealed a 2×4-mm longitudinal tear in the upper third of the posterior tracheal wall (Figure). A conservative approach was adopted and the patient was intubated. Thirty days later, fiberoptic bronchoscopy confirmed complete tracheal repair, and the patient was successfully extubated. The second case was a healthy 9-year-old girl who, following an adenectomy, presented a similar clinical picture to the first patient. An anteroposterior chest x-ray showed bilateral apical pneumothorax. Fiberoptic bronchoscopy revealed a tracheal tear measuring 4 to 5 mm in the posterolateral region in the upper third of the trachea (Figure). A conservative approach was adopted and the patient was kept intubated. Seventeen days later, fiberoptic bronchoscopy confirmed that the tracheal wall had healed, and the patient was successfully extubated.

Management of postintubation tracheal rupture is controversial, with no unanimity as yet with regard to criteria. Rossmetmal[1] maintains that conservative treatment is indicated in patients with stable vital signs, no difficulty ventilating, minimal fluid collection in mediastinum, pneumomediastinum or stable subcutaneous emphysema, and no signs of sepsis or distress. Borasio et al[2] consider that lesions smaller than 1 cm in a clinically stable patient can be treated conservatively, while clinically unstable patients or lesions larger than 2 cm should be treated surgically. Lesions measuring between 1 and 2 cm can be treated with tracheostomy or nasotracheal intubation with the balloon inflated distal to the lesion, nutrition through a nasogastric tube, and broad-spectrum prophylactic antibiotics.[2] Parenteral nutrition is indicated when the tracheal lesion is associated with esophageal lesions. Kelly et al[3] recommend the conservative management of lesions measuring less than 1 cm long and affecting at least a third of the tracheal circumference, provided subcutaneous emphysema is nonprogressive, the patient is clinically stable, and there is no evidence of mediastinitis or sepsis. Gabor et al[4] suggest that conservative treatment is indicated for patients at high surgical risk or with lesions less than 2 cm long, provided that the total thickness of the tracheobronchial wall is not affected. Kaloud et al[5] consider that surgical treatment is fully indicated when the lesion is transmural and over 1 cm long. Lesions in the upper third of the trachea, particularly if they are not

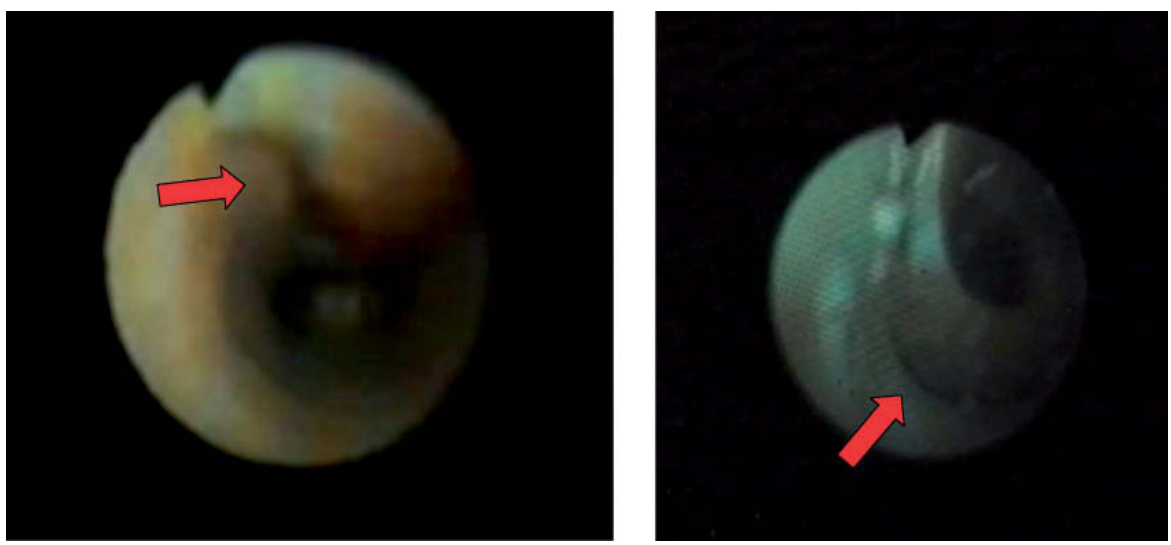

Figure. Bronchoscopic images of 2 patients with postintubation tracheal ruptures. The image on the left shows a 2×4-mm longitudinal tear in the upper third of the posterior tracheal wall, while the image on the right shows a tracheal tear measuring 4 to 5 cm in the posterolateral region of the upper third of the trachea.

transmural, can be treated with intubation, with the tube inflated distally.[5] Cabezali et al[6] maintain that treatment depends on symptoms and thickness. Patients with severe symptoms and ruptures of 2 cm or more will require surgical treatment. Those presenting small lesions with minimal clinical repercussions can be treated conservatively with broad-spectrum antibiotics, antiinflammatory drugs, oxygen, and endotracheal intubation as appropriate.[6] If reintubation is necessary, respiratory follow-up, radiographic assessment of the subcutaneous emphysema and pneumomediastinum, and bronchoscopy-controlled extubation are recommended.[1]

In conclusion, postintubation tracheal rupture is a rare entity with high morbidity and mortality. It should be suspected in all patients who present subcutaneous emphysema, pneumothorax, and/or pneumomediastinum after intubation. Conservative treatment is a safe option for clinically stable patients with good ventilation and small tracheal ruptures.

References

1. Meghan Doherty K, Tabaee A, Castillo M, Cherupally Shilpa R. Neonatal tracheal rupture complicating endotracheal intubation: a case report and indications for conservative management. Int J Pediatr Otorhinolaryngol. 2005;69:111-6.
2. Borasio P, Ardissone R, Chiampo G. Post-intubation tracheal rupture. A report on ten cases. Eur J Cardiothorac Surg. 1997;12:98-100.
3. Kelly R, Reynders A, Seidberg N. Nonsurgical management of pediatric tracheal perforation. Ann Otol Rhinol Laryngol. 2006;115:408-11.
4. Gabor S, Renner H, Pinter H, Sankin O, Maier A, Tomaselli F, et al. Indications for surgery in tracheobronchial ruptures. Eur J Cardiothorac Surg. 2001;20:399-404.
5. Kaloud H, Smolle-Juettnar FM, Prause G, List WF. Iatrogenic ruptures of the tracheobronchial tree. Chest. 1997;12:98-100.
6. Cabezali D, Antón-Pacheco JL, Cano I, García A, López M, Benavent M. Laceración traqueal producida por un traumatismo cerrado. Ann Pediatr (Barc). 2005;63:77-88.

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Hypersensitivity Pneumonitis Associated With the Use of a Steam Iron

Neumonitis por hipersensibilidad en una planchadora

To the Editor:

Hypersensitivity pneumonitis is a lung disease that is normally characterized by dyspnea, cough, and fever, resulting from immune-mediated bronchoalveolar inflammation.[1] Of the over 50 antigens that have been implicated in hypersensitivity pneumonitis,[2] *Aspergillus fumigatus* is one of the most common causes, as has been shown in cases of plasterer's lung and suberosis.[3,4] We report the case of a woman who developed symptoms of hypersensitivity pneumonitis after exposure to *A fumigatus* in water from a dryer recycled in her steam iron. This source of exposure has not been reported to date.

The patient, a 31-year-old ex-smoker of 6 pack-years, presented with a 3-month history of dry cough, dyspnea, chest tightness, and fever. The symptoms, which resolved within 24 to 48 hours, had occurred on 8 occasions, all after ironing. The patient reported that she used a steam iron in which she recycled water from her dryer, and also stated that the symptoms had not occurred before she started recycling water in this way. The physical examination, chest radiograph, and chest computed tomography were normal. Spirometry revealed a forced vital capacity (FVC) of 3.32L (95%), a forced expiratory volume in 1 second (FEV_1) of 2.46 L (86%), and a FEV_1/FVC ratio of 74%. Lung volumes and carbon monoxide diffusing capacity (DLCO) were normal. Blood tests showed a white blood cell count of 13 000/mL (85% neutrophils, 11% lymphocytes, and 0.7% eosinophils). The level of immunoglobulin (Ig) G antibodies to *A fumigatus* was 157 U/mL (normal range, < 0.35 U/mL). A bronchial challenge test—performed with the patient using an iron filled with water from her dryer—showed a 27% decrease in FVC at 24 hours after exposure, a 35% reduction in DLCO, and an increase in body temperature from 36.8°C to 37.3°C (Figure). A culture of the water used was positive for *A fumigatus*, confirming a diagnosis of hypersensitivity pneumonitis secondary to inhalation of *A fumigatus*. The patient was advised to use distilled rather than recycled water in her steam iron and has remained asymptomatic for the last 6 months.

Although the patient's clinical picture suggested hypersensitivity pneumonitis, the radiologic findings were normal. This can occur in up to 12% of cases.[5] In the absence of radiologic abnormalities, fiberoptic bronchoscopy was not performed. Although this test can be very useful, it is not essential for diagnosis.[5] The patient's symptoms might have been due to endotoxin inhalation, although

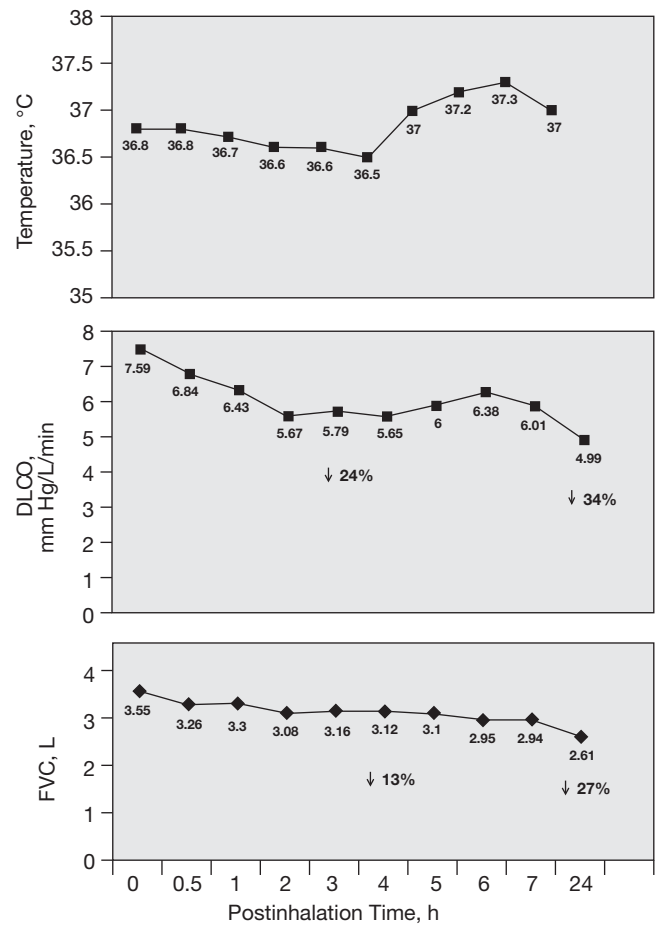

Figure. Specific bronchial provocation test conducted as the patient ironed for 30 minutes using recycled water from her dryer. FVC indicates forced vital capacity; DLCO, carbon monoxide diffusing capacity.