

## Severe acute asthma attack in a child complicated by tracheal tube malposition

Muhammad Ajmal

Received: 25 June 2012 / Accepted: 23 July 2012 / Published online: 5 August 2012  
© Japanese Society of Anesthesiologists 2012

**Keywords** Severe acute asthma · Endobronchial intubation · Complications

To the Editor:

Inadvertent endobronchial placement of a tracheal tube (TT) is not uncommon and may not have adverse consequences if it occurs for only a short period of time in otherwise healthy individuals; however, such errors can result in severe morbidity in critically ill patients. Inadvertent endobronchial placement of a TT resulted in serious complications in a child post-cardiac arrest.

A 4-year-old girl was successfully revived from cardiac arrest caused by a severe acute asthma attack. A post-resuscitation chest radiograph (CR) in the emergency department showed clear lung fields, but a 5.5-mm internal diameter TT was placed in the right main bronchus. The position of the TT was immediately corrected to a length of 13 cm at the lips. This critically ill but stable child was then admitted to the intensive care unit (ICU). On auscultation, her chest was silent, as she was suffering from

severe bronchospasm. The patient's condition started to deteriorate 1 h after admission to ICU; her arterial blood oxygen saturation fell from 92 to 89 %, and her airway pressure went up from 31 to 39 cmH<sub>2</sub>O; end-tidal carbon dioxide increased from 8 to 9.5 kPa and arterial blood carbon dioxide from 7.5 to 8.5 kPa. She was severely acidotic with a pH of 7.2. A CR taken at that time showed a complete left-lung collapse (Fig. 1a). Fifty minutes after the initial deterioration, she deteriorated further. Another CR, taken at that time, showed a right-sided pneumothorax resulting in right-upper-lobe collapse (Fig. 1b) along with the pre-existing left-lung collapse. Auscultation of the chest revealed a further silent chest owing to severe bronchospasm. The pneumothorax and lung collapse were considered to be consequences of poor air entry and high airway pressure owing to worsening bronchospasm. A chest tube was inserted (Fig. 1c) to treat the pneumothorax, but the child's condition did not improve. At that point, a careful review of the previous CR revealed that, unfortunately, the TT at some stage, somehow, had slipped into the right main bronchus again (Fig. 1d). The patient's condition started to improve as soon as the position of the TT was readjusted.

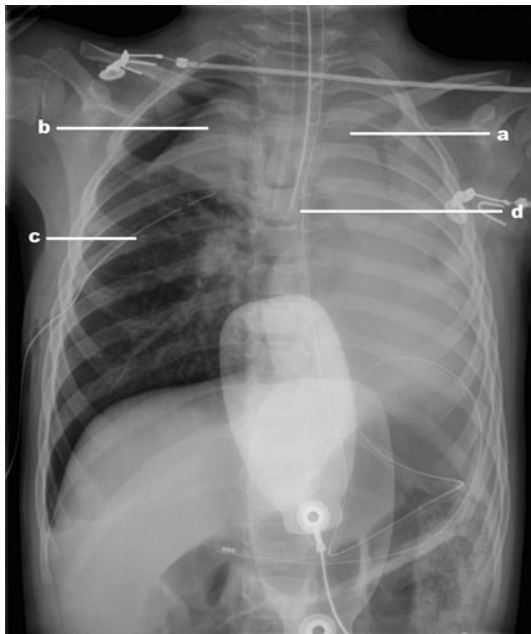
In cases like this one, it may not be possible at all to clinically ascertain the correct position of a TT [1] in the presence of severe bronchospasm. In fact, endobronchial intubation itself may mimic a worsening bronchospasm. Moreover, slight neck movements such as those occurring during intra-hospital transfers of intubated children may displace a TT from its initial correct position [2]. Chest radiographs are the “gold standard” by which to confirm the position of the TT in critically ill patients in the ICU setting, so post-intubation images must be read with care.

*Consent:* This case report is presented with the written consent of the parents of the child

---

M. Ajmal  
Department of Anesthesia, Letterkenny General Hospital,  
Letterkenny, Ireland

*Present Address:*  
M. Ajmal (✉)  
Department of Anesthesia, Beaumont Hospital, Beaumont,  
Dublin 9, Ireland  
e-mail: ajmal\_c@hotmail.com



**Fig. 1** Final chest radiograph taken in the intensive care unit (ICU) before the problem of recurrent endobronchial intubation in a child suffering from a severe acute asthma attack was identified. The radiograph shows sequential complications arising owing to inadvertent right endobronchial placement of the tracheal tube. *a* A left-lung collapse, *b* right-sided pneumothorax, *c* an in situ chest tube, *d* right endobronchial placement of the tracheal tube

**Conflict of interest** None.

## References

1. Verghese S, Hannallah R, Slack M, Cross R, Patel K. Auscultation of bilateral breath sounds does not rule out endobronchial intubation in children. *Anesth Analg.* 2004;99:56–8.
2. Yoo SY, Kim JH, Han SH, Oh AY. A comparative study of endotracheal tube positioning methods in children: safety from neck movement. *Anesth Analg.* 2007;10:620–5.