Reminder of important clinical lesson

Aspiration pneumonia caused by inadvertent insertion of gastric tube in an obtunded patient postoperatively

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Summary

A nasogastric feeding tube is commonly inserted to facilitate patient meeting nutritional needs after oral surgery. But sometimes incorrect position may cause a severe iatrogenic damage. The authors present a case of an aspiration pneumonia complication with the result of malposition of nasogastric tube while the patient was intubated postoperatively. He recovered 3 weeks later with antibody therapy.

BACKGROUND

This is a rare case of iatrogenic aspiration pneumonia complication followed by malposition of nasogastric tube while patient was intubated postoperatively.

CASE PRESENTATION

A 49-year-old man diagnosed with maxillary sinus cancer was admitted to our hospital for maxillectomy. Total operative time was 150 min with amount of bleeding around 300 ml. Then after the surgery, a nasogastric tube was used for feeding as a general rule before extubation. A 16 FG lubricated gastric tube was blindly inserted via the right naris, with resistance during advancement, and failed to insert into the oesophagus, afterwards a smaller diameter

(12 FG) stylet-stiffened fine bore tube was used instead. After a positive auscultation of the epigastrium, the tube is considered to be in the right site. But the patient resulted in an irritant coughing discontinuity after extubation of the tracheal tube, then with a repeated epigastric auscultation, be consistent with the former, the patient was send to intensive care unit (ICU) and received sufentanil 1.25 µg/ml for patient controlled intravenous analgesia (PCIA). On the postoperative day, after infusion of normal saline into the gastric tube, the patient had no cough. Afterwards, a bolus of 50 ml protein powder nutrition was instilled through the feeding tube, however, the patient suffered from persistent cough.

INVESTIGATIONS

A chest radiograph was obtained immediately, showing the nasogastric tube in the right lower lobe (figure 1). A CT examination suggested right lower pneumonia, with lateral changes in the basal ganglia (figure 2). A fibre bronchoscope showed a clear view of the right lobet and sub-segments, only a small amount of mucilage in the B8 basal segment was seen. The patient presents with right lower lobar pneumonia afterwards with the clinical high fever. A second CT 9 days later confirmed that the inflammation has been almost absorbed (figure 3).

TREATMENT

The patient received third-generation cephalosporins and nutritional support therapy for 2 weeks.

OUTCOME AND FOLLOW-UP

The patient restored to normal temperature 2 weeks later and recovered after 3 weeks.

DISCUSSION

The standard insertion of the nasogastric tube was two-step protocol proposed by Roubenoff and Ravich.¹ There are also many ways to test the correct position of gastric tube, such as the markers of pH and bilirubin of the aspirate combined by Metheny,² the presence of carbon

Figure 1 Supine radiograph of the chest, showing the nasogastric tube (large white arrow) sliding into the right lower lobe, along with right lower pneumonia.

Table 1 The comparison of laboratory result of the patient pre and postoperatively

Parameters	Haemoglobin (g/dl)	Red blood cell (million/ul)	Haematocrit (%)	Total protein (g/l)	Albumin (g/l)
Preoperatively	94	3.6	28.8%	65	45
Postoperatively	65	2.6	18.5%	57	25

Figure 2 CT of the chest (May 3) showed suggestive right lower lobe pneumonia (arrow).

Figure 3 CT of the chest (May 12) confirmed almost completely absorption of the right lower lobe (arrow).

dioxide (CO₂) through capnography,³ the usage of endoscopy⁴ for monitoring or guidance placement and finally the gold standard to verify the correct placement test with x-ray examination.

Stark in 1982 had reported the possibility of inserting passage into the gastric tube to the tracheobronchial tree besides while using the low-pressure high-compliance cuff in intubated patient.⁵ Brimacombs *et al.*⁶ reported a false-positive rate of 21% by using epigastric auscultation while mentioned the possibility that clinician will hear air entering the stomach when in fact it is not, they have emphasised that another epigastric auscultation should be repeated to reduce the false positive rate. Pillai *et al.*⁷ also discussed thoracic complications by using fine bore nasogastric tubes, with the incidence vary widely from 0.3% to 8%.

We conclude that if there are any physical signs that cause doubts concerning about the position of gastric tube, a repeated auscultation, likely to reduce the false positive rate, along with a chest x-ray should be obtained immediately.

Learning points

- The associated risk factors for this inadvertent insertion case may be as follows: First, the operator chose the stylet-stiffened fine bore tube, which is able to squeeze past the low-pressure cuff and insert it into the right tracheobronchial tree. Second, the patient was in poor general condition postoperatively (shown in table 1), with the only clinical symptom of a light coughing reflux after the malposition of gastric tube in lung, which may confound with the common complication of extubation. Third, the patient got a PCIA postoperatively, so along with the calm state in ICU, he expressed the deficiency of airway reflex caused by saline aspiration. The most important reason is that we have not taken another test to verify the true position of the gastric tube.

Competing interests None.

Patient consent Obtained.

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