Case Report

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Nasogastric Tube Placement as an Unusual Cause of Iatrogenic Hemopneumothorax in a Geriatric Patient: A Case Report and Current Literature Review

Busra Ozdemir Ciflik*, Mehmet Cetin**, Necati Solak**, Furkan Sural**, Koray Aydogdu**

*Mardin Training and Research Hospital, Clinic of Thoracic Surgery, Mardin, Turkey
**Ankara Etlik City Hospital, Clinic of Thoracıc Surgery, Ankara, Turkey

Abstract

Iatrogenic hemopneumothorax is the presence of air and hemorrhagic fluid in the pleural space. It is a complication of invasive procedures performed for diagnosis and treatment. A 75-year-old woman with a history of cerebrovascular disease and aspiration pneumonia underwent wire-guided nasogastric tube (NGT) on the first day of palliative care follow-up because of the risk of aspiration with oral feeding. Posterior-anterior chest radiography was performed after the procedure because the patient had chest pain and tachypnea. Posterior-anterior chest radiography showed that the NGT guidewire was in the right costophrenic sinus and was associated with pneumothorax. Iatrogenic hemopneumothorax may develop secondary to many invasive procedures, as well as secondary to NGT, which is a simple clinical procedure. We aim to present an unprecedented case in which a new-generation NGT with a guidewire caused a hemopneumothorax during insertion.

Keywords: Iatrogenic hemopneumothorax, nasogastric tube, palliative care

Introduction

Iatrogenic hemopneumothorax is the presence of air and hemorrhagic fluid in the pleural space, a complication of invasive procedures performed for diagnosis and treatment (1). It often occurs after interventional procedures, such as subclavian vein catheterization, transthoracic biopsy, pleural biopsy, and intercostal nerve block (1,2). Cases of iatrogenic pneumothorax after nasogastric tube (NGT) insertion have been reported. We aim to present an unprecedented case in which a new-generation NGT with a guidewire caused a hemopneumothorax during insertion.

Case Presentation

A 75-year-old woman with a history of cerebrovascular disease and aspiration pneumonia underwent wire-guided NGT on the first day of palliative care follow-up because of the risk of aspiration with oral feeding. Posterior-anterior chest radiography (PACG) was performed after two hours of the procedure because the patient had chest pain and tachypnea. Posterior-anterior chest radiography showed that the NGT guidewire was in the right costophrenic sinus and was associated with pneumothorax (Figure 1A). The patient underwent a 28 French (Fr) chest tube and chest tube connected to a single chamber underwater drainage system. (Figure 1B). Hemorrhagic drainage of 300 cc was observed. The NGT was terminated, and the lung was expanded in the PACG. Hemodynamic, hemogram, and drainage monitoring were closely performed. The patient was followed up for 10 days with a drain with a total drainage of 800 cc. The chest tube was terminated after the drainage and air leaks were stopped (Figure 1C). After that, the patient was followed up in the intensive care unit for 64 days. She died of sepsis due to pneumonia progression.

Address for Correspondence: Busra Ozdemir Ciflik, Mardin Training and Research Hospital, Clinic of Thoracic Surgery, Mardin, Turkey
Phone: +90 554 470 83 78 **E-mail:** ozdemirbusra89@gmail.com **ORCID:** orcid.org/0000-0002-8677-1142
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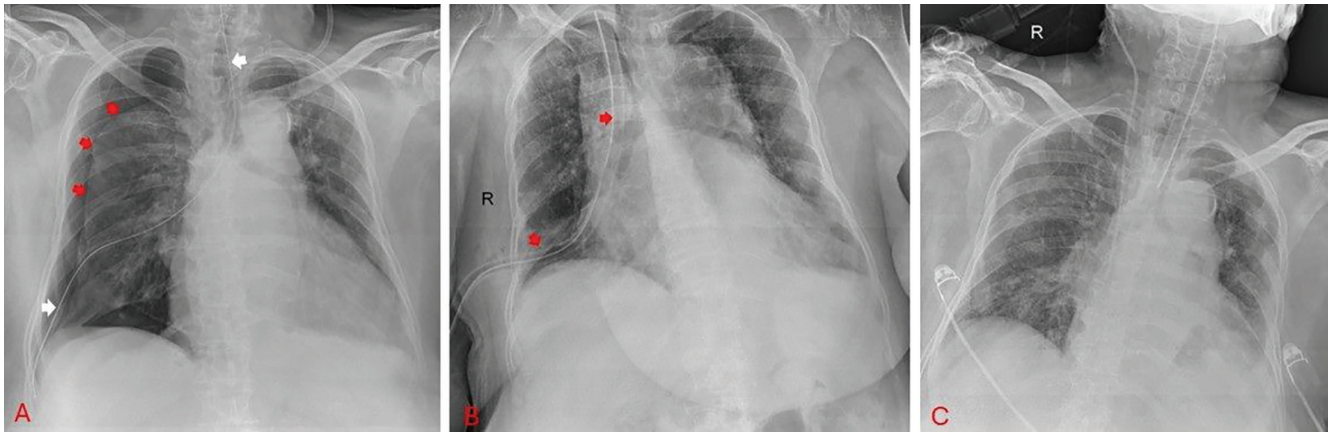

Figure 1. A) PACG after NGT insertion. Red arrows indicate the boundaries of the collapsed lung due to pneumothorax. White arrows indicate NGT. **B)** PACG after tube thoracostomy. Red arrows indicate the thoracic drain extending from the basal to the apex. **C)** PACG after termination of tube thoracostomy.

Discussion

The overall reported complication rates after NGT administration ranged from 0.3% to 8.0%. Various thoracic (bronchial placement and intravascular penetration) and non-thoracic (enteral and intracranial) complications have been reported. Misplacement of the trachea or bronchial tree occurs in approximately 0.2-0.3% of patients (3). Various complications, including atelectasis, lung abscess, bronchial perforation, pulmonary hemorrhage, pneumothorax, and empyema, are frequently observed after tracheobronchial placement. We wanted to contribute to the literature by presenting our case of hemopneumothorax after NGT placement, which is a very rare presentation in the literature.

Iatrogenic pneumothorax rarely develops after NGT for decompression of intestinal obstruction and feeding in patients with impaired oral feeding (4). In one study, NGT was performed in 740 patients who were followed-up in the intensive care unit, and pleuropulmonary complications developed in 14 patients (2%). Hemopneumothorax was found in only one patient with complications (5). Iatrogenic hemopneumothorax can occur after many invasive procedures and can also occur after NGT, which is considered a simple clinical procedure. In our case, unlike those in the literature, wire-guided NGT was performed, and hemopneumothorax occurred because the guide wire in the tube came out of the tube and perforated the lung parenchyma due to misplacement of the NGT.

Control with PACG after NGT placement is the gold standard, but in practical application, control is performed in the absence of cough or respiratory distress during placement; aspiration of gastric contents with or without litmus test, and positive auscultation of air injected through the epigastrium. However, these are unreliable, and Rassius et al. showed that misplaced tubes cannot be predicted using bedside tests (5,6). We did not perform PACG control immediately after NGT administration in our case. We performed PACG when the patient developed chest pain and tachypnea. The onset of symptoms was approximately 2 hours after the procedure. The absence of distress during insertion is particularly unhelpful because patients requiring NGT, usually due to poor swallowing, have reduced pharyngeal sensation and may not show any symptoms (7).

In treatment, follow-up with oxygen support is recommended if the patient is asymptomatic and the pneumothorax is less than 20%, and tube thoracostomy is recommended if the patient is symptomatic or has a pneumothorax of more than 20% (2). We performed tube thoracostomy in our patient because she had chest pain and tachypnea after NGT application, and a pneumothorax of >20% was detected on PACG.

In conclusion, although very rare, iatrogenic hemopneumothorax may occur after NGT placement. PACG should be performed before the active use of NGT to verify NGT placement under the diaphragm.

Ethics

Informed Consent: Informed consent was obtained.

Authorship Contributions

Concept: B.O.C., M.C., N.S., F.S., Design: B.O.C., N.S., F.S., Data Collection or Processing: B.O.C., M.C., N.S., F.S., K.A., Analysis or Interpretation: M.C., N.S., F.S., K.A., Literature Search: B.O.C., M.C., N.S., F.S., K.A., Writing: B.O.C., N.S., F.S.

Conflict of Interest: The authors have no conflicts of interest to declare.

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