A Rare Complication of Nasogastric Tube Insertion: Bronchopleural Fistula

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Abstract

A nasogastric tube (NGT) had been inserted due to the complaints of refusal of oral nutrition and aglutition to a sixty-one years old female with schizophrenia. Disturbance in general status, hypotension, dispnea and tachicardia were observed after the initiation of enteral feeding. Chest X-ray revealed left hydropneumothorax therewith tube thoracostomy was performed. Enteral feeding fluid drainage was observed. Thorax computed tomography showed NGT to be in the left pleural space. The patient was followed up after the removal of NGT and the tube thoracostomy was ended on the sixteenth day. The patient was discharged from the hospital without any sequela. Although insertion of NGT is a simple procedure it can result in serious complications like epistaxis, pharyngeal perforation, osephagial rupture and pneumothorax. The localization of the tube must be corrected after insertion in order to avoid and detect these serious complications.

Keywords: Bronchopleural fistula; Hydropneumothorax; Nasogastric tube

Introduction

Nasogastrique tube (NGT) insertion is one of the most common procedures for gastro-intestinal system evaluation [1]. It can be used with the aim of aspiration of gastric content, evaluation and treatment of recurrent vomiting, evaluation of organ injury in trauma patients, enteral feeding etc [1]. Complications like epistaxis, intracranial or bronchial localization, pharyngeal or alveolar perforation, esophageal or gastric or duodenal rupture and pneumothorax can be seen due to the malposition of NGT [2,3]. Bronchial rupture is also one of the rare complications. We report a case of hydro-pneumothorax due to the bronchopleural fistula after the insertion of NGT for enteral feeding.

Case Presentation

A sixty-one years old female patient with schizophrenia underwent coronary angiography with cardiac complaints. After the angiography treatment of the patient was rearranged due to the increase of the psychiatric findings. In the follow-up, NGT was inserted because of the refusal of oral nutrition, disphagia and aglutition. In a short time interval after the initiation of enteral feeding from NGT disturbance in general status, hypotension, dispnea and tachicardia were observed. Breath sounds were reduced on the left hemithorax in physical examination. Chest X-ray revealed left hydro-pneumothorax (Figure 1). Enteral feeding solution drainage was observed after the implementation of left tube thoracostomy. Thorax computed tomography showed NGT passing through trachea to the left main bronchus (Figure 2), going on to the lower lobe lateral basal segment parenchyma and ending in the left pleural space causing parenchymal laceration. NGT was ended with the guidance of endoscopy and stent was placed to the narrowed segment of the esophagus by Gastroenterology Clinic. Bronchopleural fistula localization could not be detected on bronchoscopy.

The patient was followed up with pleural lavage two times per day with effective antibiotics and antiseptics until the pleural fluid culture results had been negative. Tube thoracostomy was ended on day 16 after the lasting of air and fluid drainage. The patient is under follow up for six months without any recurrence.

Discussion

Nasogastric tube insertions are a common procedure in the treatment and follow up of patients [1]. The insertion, evaluation of localization and convenience of NGT can be performed by medical doctors and educated nurses [4]. Although it seems to be a simple procedure, it can cause mortal
complications due to the malposition [2,3,5]. Delayed detection of the complications worsens the situation. In the literature, different methods and techniques are defined to avoid and decrease the complications. The main methods offered are insufflation test, gastric aspiration, capnometer, capnography and magnetic guidance [2,3].

Verification of the localization is very important after the insertion NGT. The fastest and simplest method of this verification is ‘insufflation test’ which is composed of air insufflation and epigastric auscultation [2,3]. pH level of gastric aspirate from the NGT is a more accurate method [2]. Furthermore, chest X-ray is accepted as ‘gold standard’ to determine complications due to airway or thoracic malposition [6]. Roubenoff and Ravich offered this two staged method for insertion of NGT. Firstly, they push forward the NGT 30 cm blindly, then they improve the localization of the NGT in the esophagus radiographically, finally they further insert the tube to the optimal length of 50 cm and confirmed the localization with a second X-ray [7]. Marderstein et al. [8] and coworkers performed this method and reported that the incidence of pneumothorax after NGT insertion was decreased from 0.38% to 0.09%. A few new methods are described to avoid the malposition even so the performance of traditional methods. Young and coworkers notified that in addition to endoscopic and fluoroscopic based methods, a device with an external sensor which produce real time signal for localization can increase the success of NGT insertion [9]. Capnometer is another confirmation method which has the highest sensitivity and specificity. It can determine NGT malposition with the detection of CO2 [2,3].

In a study comparing NGT insertion methods, the success of endoscopic methods used during insertion was reported as 95%. On the other side the success of blindly NGT insertion was decreased through the level of 25% [10]. Rassias et al. [11] reported the tracheopulmonary complication rate as 2% and mortality rate as 0.3% due to this complication in their prospective study including 740 intensive care unit patients undergone NGT insertion.

In conclusion, however NGT insertion is thought and seemed to be a simple approach, by the consideration of its complications it must not be accepted as so innocent. As the serious complications keep in view, NGT insertion by well-experienced clinicians and confirmation of localization is important for the avoidance of complications.

References