Nasogastric tube knotting with tracheoesophageal fistula – a rare association

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Abstract

The nasogastric tube is used extensively in medical practice. However, this innocent-looking tube can at times cause unexpected complications especially in patients with preexisting risk factors. A 25-year-old male was referred to our hospital with a blocked and impacted nasogastric tube which had been inserted to maintain his nutritional status after he sustained a caustic injury to the esophagus in an attempted suicide. Esophagoscopy was done, the knotted nasogastric tube was retrieved and a tracheoesophageal fistula was detected at the site of impacted knot. However, the patient succumbed to ARDS and sepsis before definitive surgery could be done. Nasogastric intubation is not a simple procedure as is the general concept and it should not be done in cases of caustic injury to the esophagus because of increased risk of complications in the face of preexisting inflammation. To our knowledge, this is the first case report of its kind in the literature review.

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Keywords: Nasogastric tube; Tracheoesophageal fistula; Caustic injury

1. Introduction

The nasogastric tube is used extensively in medical practice and its insertion is usually left to the junior members of the staff. This innocuous-looking tube at times can be a source of many untold miseries for the patient. Even though children account for more than 80% of accidental corrosive ingestion, however, ingestion in adults is more often of suicidal intent, and, therefore, tends to cause more serious injuries [1]. The mortality rate ranges from 10% to 20% and rises to 78% in cases of attempted suicide [2].

We hereby report a case of knotting of a nasogastric tube with associated tracheoesophageal fistula in a patient who had sustained caustic injury of the esophagus in a suicidal attempt. This association of knotting of a nasogastric tube with tracheoesophageal fistula is quite rare. We could not find any such reported case in the English medical literature up to the present time on the Internet search of major electronic databases (Pubmed, Cochrane data base, Google, Medline) and we believe this is the first case report of its kind.

2. Case report

A 25-year-old male was being managed at a rural health center for caustic injury sustained by ingestion of a cupful of 30% caustic soda with suicidal intent 15 days previously. Because of non-availability of the facilities for parenteral nutrition, a nasogastric tube had been inserted to improve his nutritional status. He was on enteral tube feeding for the prior 12 days. On the 12th day after insertion of the nasogastric tube the attending physician had observed that the tube was blocked and had tried to remove it. The patient was referred to Jawaharlal Nehru Medical College Hospital, Aligarh, India with a blocked and impacted nasogastric tube. The referral letter mentioned that the doctor in charge was unable to retrieve the nasogastric tube.

Chest roentgenograms (Fig. 1a,b) revealed a nasogastric tube in situ with a knot in the upper esophagus. An emergency esophagoscopy was performed under general anesthesia and the knotted nasogastric tube was removed with some amount of difficulty. A knot was found 12 cm from the distal end of the tube (Fig. 1c).

Esophagoscopy revealed an opening in the anterior wall of the esophagus at the site of the impacted knot in the nasogastric tube. Postoperative contrast study confirmed the presence of a tracheoesophageal fistula at that site, at the level of thoracic vertebrae T2-T3 (Fig. 2). The patient was put on total parenteral nutrition, and other supportive treatment. On the fourth day of hospitalization, the patient developed high-grade fever with progressive breathlessness and his oxygen saturation decreased to 82%. The patient deteriorated and succumbed to ARDS and septicemia despite the best possible resuscitative efforts before definitive surgical repair could be done.

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3. Discussion

Feeding through the nasogastric tube is one of the commonest methods employed to maintain the nutritional status of a patient who is unable to take food orally due to disease or disability [3]. However, this innocent-looking nasogastric tube can cause unexpected complications. Since the technique is usually ‘blind’ and left to the junior members of the unit, it has often been a subject of court battles as an instrument highlighting medical errors [4]. The complications noted by various authors, especially tracheopulmonary, range from 0.3% to nearly 8% [3, 5] and even a mortality of around 0.3% is documented [6].

One of the rare complications associated with insertion of a nasogastric tube is that the distal end of the tube can undergo knotting and impaction [7]. Mechanism of knot formation is similar to that of supercoiling and concatenate formation [8]. This results in the failure of removal of the tube. The main reason for this is that the tube can coil back on itself when an excess length is introduced. The ‘victorious’ placement of the tube to its full length is not a good practice [3, 8].

Radiographs of the chest and abdomen should be obtained periodically throughout the course of nasoenteric alimentation of all patients in order to detect any subsequent tube misplacement, knot formation, or clinically silent aspiration [9].

Severe complications, often life threatening, are common following corrosive injury to the upper gastrointestinal tract. These include tracheobronchial fistula in 3%, severe hemorrhage secondary to gastric involvement, aortoenteric fistula or gastrocolic fistula, strictures and perforation in 10% of cases [1]. Mamede et al. observed an 89.3% incidence of esophagitis in their 37-year historical series [10].

The pressure effects of the knotted nasogastric tube in the background of esophagitis in our patient were evident. As the esophageal wall had already weakened due to the caustic injury, the knot in the nasogastric tube caused pressure necrosis and formation of a tracheoesophageal fistula.

4. Conclusions

Nasogastric intubation is not a simple procedure as is the general concept and it should not be left to the inexperienced team members because of its attendant complications as highlighted by our case report and documentation of other authors. The standard technique for insertion should always be adhered to and it should be followed by radiographs to rule out malpositioning and other reported complications, especially in patients requiring prolonged intubation. It is emphasized that nasogastric intubation should not be done in patients who have sustained caustic injury because of the increased susceptibility of inflamed mucosa to pressure necrosis.

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References