

호흡기 보조를 받는 환자에서 발생한 하인두 천공

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- Abstract -

A Case of Hypopharyngeal Perforation in a Trauma Patient on Ventilatory Support

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Hypopharyngeal perforation is a rare, but fatal, complication. Clinical signs and symptoms of this condition are neck pain, odynophagia, dysphagia, fever, vomiting, cervical swelling and subcutaneous emphysema. However, these signs are obscured in patient suffering from severe trauma who has had an endotracheal tube inserted, which delay proper evaluation and treatment. Here, we report a case of hypopharyngeal perforation in a trauma patient who had an endotracheal tube inserted for mechanical ventilation. [J Trauma Inj 2014;27:75-78]

Key Words: Pharynx, Neck, Emphysema, Perforation

I. Introduction

Pharyngeal perforation is a rare but serious condition. Prompt diagnosis and treatment are imperative to prevent the serious complications such as deep neck infection, acute mediastinitis and sepsis. The clinical signs of this condition include neck pain, odynophagia, sore throat, neck swelling and subcutaneous emphysema.(1,2) However, when the patient is mechanically ventilated with an endotra-

cheal tube, these signs are not remarkable and the emphysema in deep neck space might be only a sign to suspect the pharyngeal perforation.

II. Case

A 40-year-old man was admitted to our hospital complaining of dyspnea and chest pain. He experienced that a heavy material like a container accidentally fell into the left chest and the shoulder

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during his working. He had no dental and medical disease in past history. There was no evidence of neck trauma. Blood pressure was 80/60 mmHg and respiratory rate was 22 breaths /minute. On physical examination, the chest showed the paradoxical movement indicating the flail chest during the respiration. The arterial blood gas revealed that PaO₂, PaCO₂ and pH was 87.4 mmHg, 59.4 mmHg and 7.238 on 10 L/min oxygen via facemask. Endotracheal intubation was immediately performed in emergency room to manage the respiratory distress before examining simple chest X-ray. There was no report of difficult intubation. On chart review, one physi-

cian performed the endotracheal intubation using intravenous anesthetic agent three times. After that, chest X-ray and chest computed tomography (CT) was performed and showed multiple rib fracture from 1st rib to 12th rib, left clavicle fracture and emphysema especially in the deep neck (Fig. 1). The oropharyngeal examination was not performed at the emergency room because the endotracheal tube was placed. And then, the patient was mechanically ventilated to manage the flail chest (Simultaneous Intermittent Mechanical Ventilation, Fraction of inspired oxygen 40%, Tidal volume 450 ml/m, Respiratory rate 18 breaths/min, Positive end-expi-

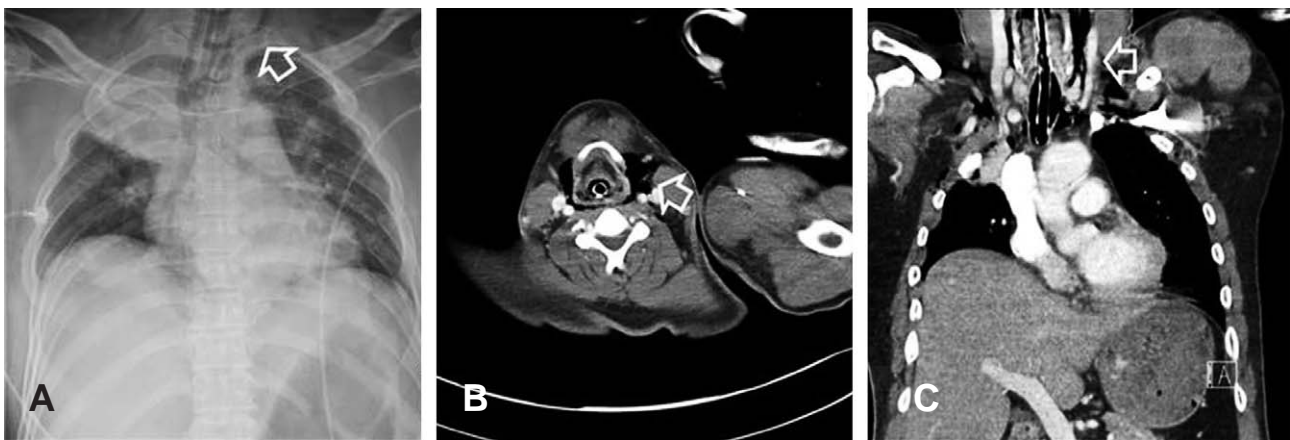


Fig. 1. Chest X-ray and chest computed tomography shows extensive emphysema (arrow) from the deep neck to the chest wall. The massive air are mainly present in the deep neck (A, B, C).



Fig. 2. Neck CT images. Diffuse mucosal swellings and emphysema (arrow) are found in the hypopharynx and the larynx (A, B).

ratory pressure 5 cmH₂O). On the fourth day, the neck swelling developed and fever was up to 39°C. The neck CT was followed and showed diffuse mucosal swellings and emphysema around the pharynx (Fig. 2). The cefepime and clindamycin were given intravenously and continued. The daily chest X-ray in the intensive care unit showed the pulmonary congestion and the haziness of lung fields. Fever didn't disappear and renal complication developed. Because the condition gradually aggravated and the flail chest should be managed, mechanical ventilation should be applied without extubation. The laboratory findings worsened and showed that CRP, ESR, BUN and Creatinine was 51.14 mg/dl, 114 mm/hr, 80 mg/dl and 4.0 mg/dl respectively. On the fifteenth day, the needle aspiration was performed because the neck swelling and septic condition were not improved and then large amount of pus was aspirated. The white blood cell count rose up to 23450/ μ l from 7650/ μ l at admission. Conservative treatments, such as ventilatory support, antibiotic therapy, closed thoracostomy and renal replacement therapy, were performed before surgery. The patient underwent the surgical management. The curvilinear incision was made in the submandibular area and the inferior skin flap was undermined through subplatysma space and reached the posterior aspect of left sternocleidomastoid (SCM) muscle and it was bluntly dissected. The defect opened into the hypopharynx was found at the level of the posterior upper left SCM muscle. The hypopharyngeal defect was more than 1 finger-breadth. Large amount of pus and hematoma were found at both posterior upper and lower SCM area and evacuated. *Staphylococcus aureus* and *acinetobacter baumannii* were isolated from the pus. Even after the operation, the pus was continuously drained from the wound without stopping. The septic condition was not improved and progressed into the multi-organ failure. On postoperative day 26, the patient finally expired.

III. Discussion

Hypopharyngeal perforation is a rare but life threatening condition and commonly caused by

iatrogenic instrumentation like endotracheal intubation, transesophageal endoscopy and also by blunt trauma.(3,4) It is difficult to suspect the pharyngeal injury in the setting of severely ill trauma patient with respiratory support because the symptoms were obscured. Emphysema in the deep neck, mediastinum and chest wall might be an only sign of the pharyngeal injury. Therefore, any finding that indicate the pharyngeal injury should be evaluated at any expense. A delay in operation of a significant perforation greater than 12 hours after the injury is associated with a 56% mortality.(5) To avoid the serious complications such as the deep neck infection, acute mediastinitis, early diagnosis and treatment is essentially needed.

The treatment of the hypopharyngeal or esophageal perforations may be conservative or surgical. When the perforation is small (less than 0.5 cm) and any complication is absent, conservative treatment is indicated. However, when the defect is large (larger than 0.5~1.0 cm) or any complication develops, the surgery including primary closure and drainage is needed.(6-8)

In current case, the cause of the hypopharyngeal perforation was not clearly understood. It is only guessed that the endotracheal intubation might be related because the emphysema was mainly present in the deep neck space at admission without head and neck trauma. The hypopharyngeal injury was the laceration and bleeding and then finally infected in later. In regarding a management, the patient should be extubated and carefully examined as soon as possible. If the extubation is not possible, surgical neck exploration should be considered. To overlook the emphysema finally lead to the deep neck infection and death.

IV. Conclusion

Despite the relatively rare occurrence, hypopharyngeal injury, especially when the diagnosis and management were delayed, was associated with high morbidity and mortality. Therefore, emphysema in deep neck and chest wall should be promptly evaluated and managed because the clinical signs of pharyngeal perforation are not prominent in trauma patient supported by a mechanical ventilator.

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