CHAPTER 8

Aspiration pneumonia

The committee for The Japanese Respiratory Society guidelines in management of respiratory infections

The Japanese Respiratory Society

Aspiration pneumonia


ASPIRATION PNEUMONIA

Disorders that are likely to lead to aspiration pneumonia

Aspiration is defined as accidental entry of water, food (exogenous substances), oropharyngeal secretions or gastric juice (endogenous substances) into the lower respiratory tract. However, aspiration generally has two meanings: (i) rapid aspiration of a large amount of gastric contents, as typified by Mendelson syndrome (pulmonary disorders resulting from aspiration of gastric contents into the lungs following vomiting or regurgitation in obstetric patients); and (ii) inapparent aspiration and repeated aspiration of small amounts of oropharyngeal secretions and gastric juice into the respiratory tract without being aware of it. Chemical-induced pneumonitis (induced by gastric juice having a pH ≤ 2.5) is excluded in this chapter, and thus aspiration pneumonia here refers to pneumonia resulting from aspiration of gastric contents (food and gastric juice) and oropharyngeal secretions into the lungs following vomiting or regurgitation.

Aspiration pneumonia occurs almost exclusively in the elderly with swallowing disturbance. In some cases, aspiration pneumonia may be strongly suspected because of coughing, stridor, and vomiting after meals. In other cases, occult repeated aspiration may occur while sleeping at night (without anyone noticing it). Clinically, patients with cerebrovascular disorders, dementia, consciousness disturbances, neuromuscular diseases such as Parkinson’s disease, diminished activities of daily living and gastroesophageal regurgitation often develop aspiration pneumonia (Table 1). Microflora present in gastric juice and enteric fluid frequently become causative bacteria in elderly patients with gastroesophageal regurgitation and in postgastrectomy patients. Bedridden patients also often develop aspiration pneumonia as a result of aspirating oropharyngeal secretions and gastric juice, the same as in ventilator-associated pneumonia.

Diagnosis

Aspiration pneumonia cannot be diagnosed without suspecting aspiration. Physicians therefore should strongly suspect aspiration pneumonia if patients have any of the underlying disorders that may cause aspiration mentioned above and experience repeated episodes of pneumonia, or if they are bedridden.

It is important to determine whether patients have dysphagia, because aspiration pneumonia is a disorder resulting from swallowing disturbances. In many cases, the swallowing disturbances are only mild and often overlooked. The most reliable procedure for detecting swallowing disturbances is monitoring swallowing after ingestion of contrast media by video fluorography, but video fluorography is a cumbersome procedure, making it difficult to perform as a routine test in hospitals in the community. At the bedside, a simple two-step swallowing provocation test is available for diagnosis (the so-called ‘Todai Procedure’, developed at the University of Tokyo) (Table 2).

The conscious patient lies in a face-up position, a nasal tube is inserted into the throat, and distilled water is injected twice (i.e. two-step swallowing provocation test).

Aspiration must be demonstrated by using radioisotopes. Gauze coated with indium$^{111}$ chloride (a glue-like substance) is attached to the patient’s teeth, and after an overnight sleep with the gauze in place, a chest X-ray is taken with a γ-camera in the morning. If radioisotope uptake is detected in the lungs, it demonstrates aspiration. However, the possibility of aspiration cannot be ruled out even if there is no radioisotope uptake into the lungs. Cerebrovascular disease is one of the major factors contributing to
aspiration pneumonia in elderly patients, and brain CT scanning is a useful procedure as a supportive diagnostic tool. Bilateral cerebral thrombosis in the basal ganglia is a risk factor for aspiration pneumonia.

Causative bacteria of aspiration pneumonia

Oral microflora are usually the causative bacteria of pneumonia, and anaerobes are primarily the causative bacteria of aspiration pneumonia. Gram-negative rods and MRSA (which are common causative bacteria of hospital-acquired pneumonia) are often associated with aspiration pneumonia in elderly patients in nursing homes or hospitals. Prevalent aerobes include *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Pseudomonas aeruginosa*, and enteric gram-negative rods. Since oral microflora are often the causative bacteria of aspiration pneumonia, it is difficult to identify them in sputum specimens. Percutaneous lung biopsy is a reliable procedure for specimen collection, but it is highly invasive. When it is necessary to isolate and identify the causative bacteria, the transbronchial protected specimen brushing procedure is preferable, because there is relatively little risk of contamination by normal flora in the oral cavity.

Antibacterial agents

Optional antibacterial agents should be chosen, considering mixed infections with gram-negative rods and anaerobes. In addition, patients with aspiration pneumonia are often elderly, and since most elderly patients with aspiration pneumonia are likely to have underlying disorders, they must be treated on the assumption that the severity rating of the pneumonia is moderate or severe. Therapy options include β-lactamase-inhibitor-containing penicillins, carbapenem antibiotics, third generation cepham antibiotics plus one of the carbapenem antibiotics in combination with clindamycin. (Refer to Chapter 5.)

Prevention

It is very important to institute prevention measures against aspiration pneumonia in addition to chemotherapy for the pneumonia, because patients often experience repeated episodes of aspiration pneumonia, as is evident from the aetiology of this disease.

Prevention of cerebrovascular disorders

Since cerebrovascular disorders are one of the main factors contributing to the aetiology of aspiration pneumonia, it is very important to control hypertension, diabetes mellitus and other common diseases of modern living. If a patient already has cerebrovascular disease, it is important to prevent further progression.

Mouth care (oral hygiene)

Since oral microflora (bacteria) are often the causative bacteria of aspiration pneumonia, it is important to brush the teeth thoroughly after having meals. The oral cavity should also be kept as clean as possible by gargling. Treating periodontitis is also beneficial as a means of preventing aspiration pneumonia.

Body posture

Body posture is a problem in patients with gastroesophageal regurgitation or who have undergone
gastrectomy. It is particularly important to change the body position of bedridden patients to prevent bedsores. It is important to avoid increasing intragastric pressure, and to maintain the patient’s head as high as possible after meals and at bedtime.

**Feeding through a nasal tube or gastric tube**

If patients are unable to ingest food because of severe dysphagia or if they repeatedly aspirate, they must be fed through a nasal tube or gastric tube. However, it is preferable to perform an endoscopic gastrostomy rather than perform nasal feeding. In patients with gastroesophageal regurgitation it is important to infuse the fluid gradually to avoid elevating intragastric pressure. It is important to maintain the tip of the gastric tube in as distal a position as possible.

**Drug therapy**

If patients with cerebrovascular disorders and hypertension are not bedridden, hypotensive drugs such as ACE inhibitors may be effective in preventing aspiration pneumonia.

**REFERENCE**