CASE REPORT

위루관을 통한 내시경적 이물 제거술

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Endoscopic Removal Through a Gastrostomy of Swallowed Acupuncture Needles

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Acupuncture is a representative treatment field in oriental medicine that is used widely in various medical conditions. Although acupuncture is considered a safe procedure, it can cause complications. This paper reports the case of a 44-year-old quadriplegic woman who received a percutaneous gastrostomy (PEG) tube and was referred for the endoscopic removal of swallowed acupuncture needles. The needles were removed successfully by endoscopy through the PEG tube using the rendezvous technique without significant complications. (*Korean J Gastroenterol* 2021;78:289-294)

Key Words: Acupuncture; Gastrostomy; Endoscopy

INTRODUCTION

Acupuncture is a relatively widely practiced alternative and complementary therapy in many countries worldwide, including the United States, Europe, and Asian countries, and is a characteristic and unique form of oriental medicine treatment.¹ Acupuncture is performed to help in the treatment of various diseases.^{2,3} Although the precise mechanism has not been elucidated, acupuncture is effective in relieving pain and is believed to be helpful in rehabilitating patients with various forms of paralysis caused by neurological diseases.⁴ While generally considered safe, acupuncture can lead to complications, including infection, hemorrhage, pneumothorax, and cardiac tamponade, as well as issues related to foreign bodies if the acupuncture needle enters the body.⁵⁻⁷

While foreign bodies can enter the upper gastrointestinal

tract through various means, most cases involve unconscious swallowing. If not removed early, foreign bodies in the gastrointestinal tract can cause symptoms, such as chest pain and dysphagia, as well as perforation due to pressure necrosis and severe infections if they remain in the gastrointestinal tract for long periods.⁸ With the development of therapeutic endoscopic procedures, most foreign bodies in the upper gastrointestinal tract can be removed successfully; however, sharp foreign bodies remain challenging to capture or remove for various reasons.^{9,10} These foreign bodies are difficult to remove safely, and attempts to remove them forcibly have high risks of serious complications, such as perforation and bleeding. Many of these cases may require surgery.

This paper reports a rare complication of acupuncture treatment, in which acupuncture needles entered the gastrointestinal tract as foreign bodies and were removed success-

Received July 19, 2021. Revised August 9, 2021. Accepted August 9, 2021.

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Financial support: None. Conflict of interest: None.

fully via endoscopy through a gastrostomy tube.

CASE REPORT

A 44-year-old woman was referred for an evaluation and management of foreign bodies measuring approximately 45 mm and 50 mm long on simple abdominal radiography (Fig. 1). She was in a quadriplegic state and had global aphasia due to a history of subarachnoid hemorrhage from a rupture of a right middle cerebral artery aneurysm. She had no other

Fig. 1. Plain abdominal radiography showing two linear radiopaque materials (arrows).

underlying diseases. She was being fed through a percutaneous endoscopic gastrostomy (PEG) tube. She had recently been treated with acupuncture on her face for rehabilitation at the oriental medicine hospital. Although she could not express specific symptoms or complaints, she showed an ill-looking appearance and cold sweating. Her vital signs were relatively stable. Her blood pressure, heart rate, respiratory rate, and body temperature were 110/80 mmHg, 74 beats per minute, 20 breaths per minute, and 36.4°C, respectively. The complete blood cell test revealed a white blood cell count of 10,360/ μ L (segmented neutrophil 77.6%), hemoglobin level of 13.4 g/dL, and platelet count of 208,000/ μ L. The serum chemistry findings showed a normal liver and kidney profiles and slightly increased CRP levels (0.843 mg/dL). Simple abdominal radiography revealed approximately 45 mm and 50 mm long radiopaque linear foreign bodies in the right upper quadrant area. Abdominal CT revealed high-attenuated linear objects (45 mm and 50 mm each) embedded in the second and third portions of the duodenum (Fig. 2). There was no definite evidence of complications, such as pneumoperitoneum or hematoma. Esophagogastroduodenography (EGDS) revealed two acupuncture needles embedded in the second and third portions of the duodenum (Fig. 3). The acupuncture needles were extracted successfully from the duodenum to the stomach with grasping forceps (FG-49L-1, Olympus®, Tokyo, Japan) (Fig. 4). Despite several attempts, the needles were grasped not in parallel but rather in the perpendicular direction. Therefore, it was difficult to remove the needles through the esoph-

Fig. 2. (A-C) Abdominal computed tomography showing the acupuncture needles puncturing the second and third portions of the duodenum (arrows).

agogastric junction, and the mucosa was repeatedly injured, leading to hemorrhage in the gastric cardia and esoph-

agogastric junction. Hence, another grasping forceps was inserted through the PEG tube (20 Fr, Ting®, THE ING MEDICAL,

Fig. 3. (A, B) Endoscopic findings showing acupuncture needles at the second and third portions of the duodenum.

Fig. 4. (A-C) Acupuncture needles were extracted endoscopically from the duodenum using rat-tooth forceps.

Fig. 5. (A, B) One forceps was accessed endoscopically, another forceps was inserted through the percutaneous endoscopic gastrostomy (PEG) tube, and the needles were removed successfully through the PEG tube via the rendezvous technique.

Fig. 6. (A, B) After removing the acupuncture needles, the endoscopic image showed mild exudate and redness. (C) After removing the acupuncture needles, no related complications were observed on the simple X-ray.

Ogcheon, Korea) to avoid further mucosal damage. The needles were removed successfully through the PEG tube using the rendezvous technique (Fig. 5). Subsequent EGDS and simple radiography did not show persistent mucosal bleeding or perforation. There were only mild erosions in the duodenal mucosa where the needles had been lodged, with no evidence of perforation or bleeding.

Gastroscopy, performed after removing the foreign bodies to determine the presence of complications, did not show continuous mucosal bleeding and was accompanied by only mild redness, erosion, and edema of the duodenal mucosa where the needles had been lodged. The follow-up laboratory test findings were non-specific. A simple X-ray did not show any suspected free air or fluid accumulation (Fig. 6).

DISCUSSION

Endoscopy is one of the most useful methods for removing foreign bodies in the gastrointestinal tract.^{11,12} Most foreign bodies in the gastrointestinal tract that previously required surgical treatment can now be removed endoscopically owing to advances in endoscopic instruments and techniques.^{10,13} Acupuncture is generally considered a safe treatment with relatively few side effects compared to drugs or other treatments. On the other hand, foreign bodies in the gastrointestinal tract or various organs can cause local or systemic complications.^{14,15} White et al. reported 684 complications per 10,000 cases related to acupuncture treatments in the United Kingdom. Most cases were minor, but 0.05 cases per 10,000 cases involved severe complications that required addi-

tional treatment.^{16,17} Another study reported a 7.1% incidence of minor complications and five cases of serious complications among 97,733 patients who underwent acupuncture.¹ In Korea, although acupuncture is more popular compared to other countries, data regarding the exact incidence of complications caused by acupuncture treatment are lacking. As in this case, complications caused by swallowing acupuncture needles are particularly rare.

Foreign bodies in the upper gastrointestinal tract can be classified broadly into cases of accidental or intentional swallowing of various objects of daily life and cases of ingestion of food or drugs. In general, 80-90% of swallowed gastrointestinal tract foreign bodies are passed naturally without clinical problems, but some may cause complications, particularly if they are large or sharp.^{10,18}

Acupuncture needles found as a foreign body in the gastrointestinal tract may have entered the stomach or duodenum by swallowing, but the detailed process is unclear. The patient in the present case was unable to communicate owing to her quadriplegic state. Moreover, because of swallowing difficulty, she was being fed through a PEG tube. Thus, the process by which the acupuncture needles entered her duodenum was unclear. No study has yet proposed an explanation for this finding, and it was difficult to find a plausible explanation.

Nevertheless, it can be explained as follows. Dysphagia refers to a condition in which swallowing is difficult and may be caused by an imbalance in the peristalsis of swallowing. It refers to something that cannot be controlled by involuntary movements. In a normal person, when a foreign object enters the mouth, it is possible to regurgitate it. In this case, however,

when the acupuncture that was around the mouth entered the oral cavity by accident, it might not be removed properly. Thus, it passes from the mouth into the esophagus with a very rare probability because it cannot be spat out and then passes due to the involuntary movement of the gastrointestinal tract.

When removing foreign bodies using an endoscope, it is essential to determine the precise location of the foreign bodies and capture them using appropriate devices. On the other hand, owing to the risk of mucosal damage, removing the captured foreign materials through the stomach, esophagus, and mouth carefully is also important. Grasping forceps are generally used in endoscopic foreign body removal, but a Dormia basket or net and balloon enteroscopy have also been used.^{19,20} In addition, an overtube can also be used to remove trapped foreign bodies safely. Properly breaking or bending the foreign bodies can also be considered for safe removal. In the present case, the patient's poor general condition made it difficult to spend enough time while performing the endoscopy. Thus, specialized devices, such as an overtube, were not prepared.

An important point when removing sharp foreign bodies is that the tip of the foreign body must be positioned distally during the removal process. Therefore, removing foreign bodies through the gastroesophageal junction to the outside of the oral cavity can be difficult. Fortunately, in this case, the foreign bodies were removed successfully using the rendezvous technique through the existing PEG tube, with no serious complications related to the procedure.

In conclusion, although severe complications from acupuncture needles as foreign bodies are rare, they can have fatal outcomes without prompt recognition of this complication. Therefore, practitioners who perform acupuncture and clinicians who do not perform it directly should understand and pay attention to potential complications. Imaging tests should be actively performed for suspected complications, including foreign bodies. Overall, it is important to understand the safe removal of foreign bodies from the gastrointestinal tract and consider alternative methods in difficult cases. In addition, creative procedures should be devised based on the specific patient situation.

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