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Gastric Outlet Obstruction without a Characteristic Pyloric Mass in a Newborn

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Abstract：We herein present a case of gastric outlet obstruction (GOO) in an infant whose etiology was neither infantile hypertrophic pyloric stenosis nor some well understood rare cases such as antral web, and so on. A 3,726 g female baby was born by spontaneous vaginal delivery at 40 weeks gestation and non-bilious vomiting was found after 6 hours of life. Although an abdominal X-ray demonstrated a dilated stomach with air filled and an upper gastrointestinal series performed on the 5th day of life demonstrated stenosis of the pylorus, no characteristic olive mass which indicated hypertrophic pyloric stenosis was palpable by repeated examinations. A laparotomy performed on the 6 day of life revealed the existence of neither an olive tumor nor an antral web. Heinicke-Miculicz pyloroplasty was thereafter successfully performed and the postoperative course was unremarkable. The etiology was unknown but a few similar cases have been reported. Further such cases should thus be accumulated in order to elucidate the possible etiology of this disease.

Key words：**Gastric outlet obstruction, Newborn, Etiology**

Introduction

The most common cause of gastric outlet obstruction (GOO) in the early period of life with symptoms such as projectile non-bilious vomiting, dehydration, and poor weight gain is infantile hypertrophic pyloric stenosis (IHPS). Other rare causes, including an antrum web, and so on, have also been reported. We herein present a neonate case which had similar symptoms of IHPS but neither a characteristic olive nor an antral web was found at the operation and pyloroplasty was able to effectively improve the symptoms.

Case report

A 3,726 g female baby was born by spontaneous vaginal delivery at 40 weeks gestation. Her Apgar score was 10 and 10 at 1 and 5 minutes, respectively. The amount of amniotic fluid was determined to be normal by a prenatal ultrasound examination. Although her activity was good and the elimination of meconium was observed after birth, non-bilious vomiting was found after 6 hours of life. As a result, the patient had lost 13.1% of her weight by the 3rd day of her life due to frequent non-bilious vomiting and she was therefore transferred to the neonatal intensive care unit (NICU) of our institution. An examination performed at admission showed a soft and flat ab-

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domen without any mass and an X–ray demonstrated a dilated stomach with air filled and the movement of gas to the small intestine and colon was also confirmed(Figure 1). Blood tests showed hyperosmotic dehydration. We performed nasogastric decompression which successfully stopped the vomiting symptoms. Both dehydration and electrolyte abnormalities were corrected by fluid therapy. An upper gastrointestinal series performed on the 5th day of life demonstrated stenosis of the pylorus (Figure 2). At laparotomy due to a suspected diagnosis of pyloric or duodenal stenosis on the 6th day of life, the muscle of the pylorus was a little bit thick but it did not form a characteristic olive mass which is specific to IHPS. As we considered the cause of stenosis to be the pylorus, a longitudinal incision of the pylorus was made and hypertrophy of the pyloric muscle (about 3 mm) and the absence of other findings such as membranous stenosis of the duodenum and antral web of stomach was confirmed. Heinicke–Miculicz pyloroplasty was thereafter successfully performed and the postoperative course was unremarkable.

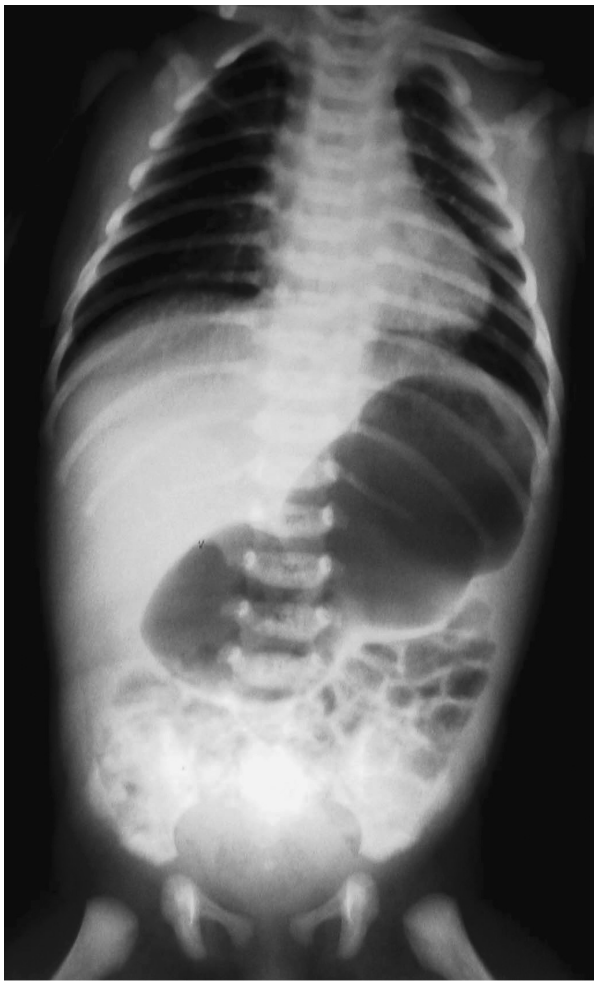

Figure 1. An abdominal X–ray at 3 days of age. The stomach dilated and filled with air. Colon gas was also demonstrated, thus indicated an incomplete obstruction of the pylorus.

Discussion

An infant demonstrating GOO tends to present such symptoms as projectile non–bilious vomiting, dehydration, and poor weight gain and many such patients thus need a surgical correction.

IHPS is the most frequent surgical pathology of GOO in infant. Although the symptoms may occur between 3 and 6 weeks of life in many cases of IHPS, some IHPS that were diagnosed and operated on in the first week of life had been reported.[1)–3)] In many IHPS patients, the characteristic mass that is called an" olive "can be detected by palpation and/or ultrasound examinations on the upper quadrant area of abdomen in addition to the symptoms pointing to the gastric outlet obstruction.

Another rare cause of gastric outlet obstruction is the antral web. Antral webs have been described in patients of all ages and infants present with non–bilious vomiting without a palpable pyloric tumor.[4)] These webs or the diaphragms are located a few centimeters proximal to the pyloroduodenal junction.[4)] Although the diagnosis before operation can be made by gastrointestinal roentgen studies or gastroscopy, some patients who could not be diagnosed to have an antral web before operation have also been reported.[4)] Other rare causes such as acid peptic disease[5)] and neoplasm[6)] have been reported to be a cause of GOO in infants.

In our case, the patient demonstrated symptoms pointing to GOO, such as projectile non–bilious vomiting since 6 hours after the birth. However, a characteristic olive tumor could not be detected by repeat palpation. In imaging studies, plain abdominal X–ray film showed a dilated stomach with air filled and upper gastrointestinal series demonstrated pyloric stenosis without findings related to

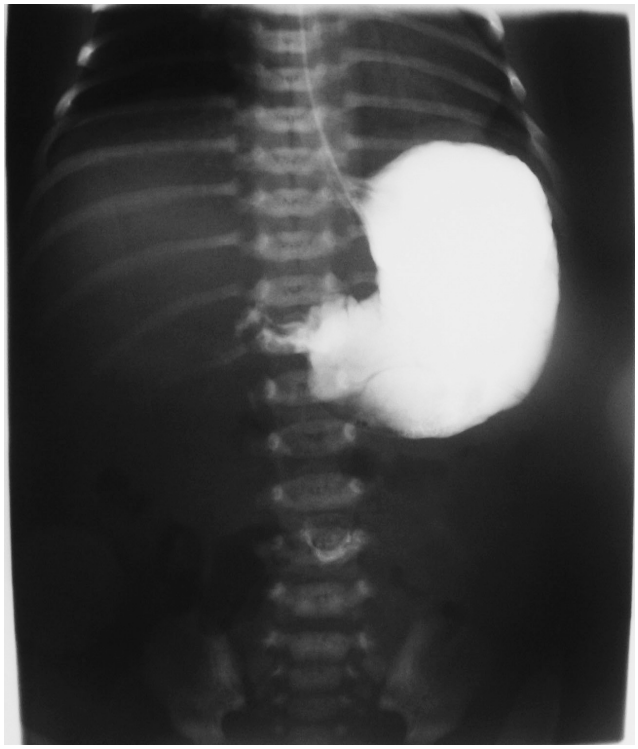

Figure 2. An upper gastrointestinal series performed at 5 days of age demonstrated a narrowing of the pylorus and contrast material could not pass into the duodenum.

antral web. During laparotomy, the muscle of pylorus was thick but the characteristic olive which indicates IHPS was not formed and no existence of an antral web or diaphragm was observed. As a result, neither classic IHPS nor an antral web was appropriate for the diagnosis of our patient. Heinicke–Miculicz pyloroplasty effectively improved this case of GOO.

Although the etiology of IHPS remains controversial, it is believed that the hypertrophy of the pylorus of IHPS patients is not detectable at birth by either radiography and ultrasonography[7] and the process of pyloric muscle hypertrophy occurs after birth. According to this fact, there is a possibility that our case could have been in process of developing the classical IHPS because our case showed mild thickness of pyloric muscle and was only 1 week of age when the operation was performed. Howerver, the precise reasons why our case showed classical symptoms of GOO before the growth to a characteristic mass remain unclear.

In 1997, Sharma et al.[8] reported five pediatric cases of an unique, non–specific pyloric obstruction. These five patients whose ages ranged from 3 months to 6 years of age had a dilated stomach with delayed gastric emptying but no findings such as hypertrophy of the pylorus, scarring, or an antral web were identified during laparotomy, even though their pylorus showed definite narrowing. A histological inspection of the pyloric muscle confirmed no abnormality. Heinicke–Miculicz pyloroplasty was performed and it effectively improved the symptoms for all patients. Although a neonate case was not included to their report, their cases were the only ones similar to our case, which we could find based on an extensive review of the literature. They assume that there may be some sudden neuromuscular incoordination caused by some unspecified agent.

In conclusion, we herein described an infant case of GOO whose symptoms developed soon after birth. A laparotomy revealed its etiology to be neither classic hypertrophic pyloric stenosis nor some rare cases such as an antral web. Heinicke–

Miculicz pyloroplasty effectively demonstrated an improvement in the symptoms. The cause is still not well understood but the accumulation of more such cases will hopefully enable us to elucidate the etiology of this disease in the future.

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