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CASE REPORT

The Olive Sign in Infantile Hypertrophic Pyloric Stenosis: A Case Report

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ABSTRACT

Infantile hypertrophic pyloric stenosis (IHPS) is a disease in infants caused by smooth muscle hypertrophy in the pylorus, which can progress to complete obstruction of the gastric outlet, leading to severe non-bilious vomiting. The presentation of the disease is in the form of projectile and non-bilious vomiting following feeding in infants. The etiology is unknown. In cases where diagnosis and treatment are delayed, weight loss, malnutrition, fluid and electrolyte disorders, dehydration, acid-base imbalances and even death may occur. Early diagnosis may be life saving in IHPS. Physical examination and imaging methods are used in the diagnosis. The 'olive sign' can be seen in most cases with IHPS. A family physician should be able to diagnose and regulate the treatment of uncommon diseases like IHPS in primary care. In this case, the palpated olive sign played a key role in the diagnosis.

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Introduction

Infantile hypertrophic pyloric stenosis (IHPS) is a disease seen in infants caused by smooth muscle hypertrophy in the pylorus, which can progress to complete obstruction of the gastric outlet and cause severe non-bilious vomiting. It occurs in approximately 2 to 3.5 per 1000 live births. It is more common in male infants than in female infants, with a ratio of 4:1 to 6:1.

Symptoms in IHPS usually begin at the age of three to five weeks (2). The classic presentation is generally non-bilious vomiting in a projectile style following feeding. The amount and severity of vomiting gradually increases. Depending on the duration of the symptoms, dehydration and hypokalemic, hypochloremic metabolic alkalosis may occur (3). In cases where the diagnosis cannot be made early, weight loss, malnutrition, fluid and electrolyte disorders, dehydration, acid base imbalances may occur in infants, and even death may result when treatment is delayed.

The diagnosis can be made by anamnesis and careful physical examination. Laboratory tests and direct abdominal radiography as an imaging method are helpful in diagnosis. The definitive diagnosis is made by abdominal ultrasound. The treatment is surgical and Ramstedt ectramucosal pyloromyotomy is performed. It is important to ensure the fluid-electrolyte balance of the patient in the preoperative period (3).

This case is presented in order to bring hypertrophic pyloric stenosis to mind in infants with recurrent hospital admission with vomiting complaint and to emphasize the importance of detailed physical examination in family medicine.

Case Presentation

A 35-day-old male infant was applied to the emergency room with non-bilious vomiting. In the anamnesis, it was learned that vomiting started 5 days ago, its severity gradually increased, during this period, he applied to two different external emergency services and he was discharged after symptomatic treatment. Our patient, who was born with a normal vaginal spontaneous birth at 39 gestational weeks as 3300 g (50p). He had no known disease and no important characteristics related to his family history, except that his parents were distant relatives.

He was admitted to the service for follow-up and treatment due to his dehydrated appearance. On physical examination, our patient appeared moderate dehydrated. The skin turgor had decreased. The eyeballs were slightly collapsed. His weight was measured as 3450 g (3p), height 55.5 cm (50-75p), head circumference 36.8 cm (25-50p). The vital signs were normal. During the examination, it was observed that he vomited projectile and non-bilious twice. Abdominal examination was performed during sleep. There was no tenderness, no defense, no rebound. There was abdominal distention. With deep palpation, there was a mass about 2 cm in size that was palpable in the right upper quadrant. This mass was considered as the ‘olive sign’ seen in IHPS. The ‘olive sign’ can be seen in most cases (60-80%) with IHPS (4).

The patient's tests were normal at the external hospital, but in our hospital, pH: 7.68, pCO2: 34.6, HCO3: 43.0 in the blood gas, potassium: 2.6, chlorine: 90 in the biochemistry tests were found. The patient was confirmed to have hypochloremic hypokalemic metabolic alkalosis. Other blood parameters were within the normal range.

The patient, who was informed that there had been no urine output for a day, was loaded with 60 cc of physiological saline as a bolus, and urine output was observed after an hour.

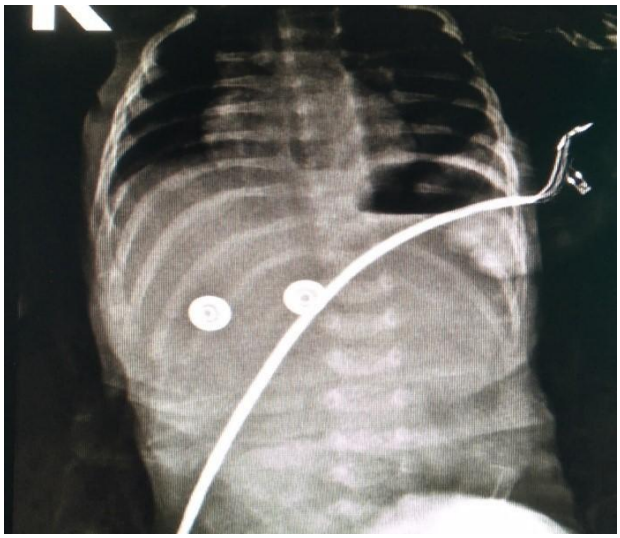

Figure 1. Dilated Stomach Image on Standing Direct Abdomen X-ray

Discussion

Infantile hypertrophic pyloric stenosis occurs at a rate of approximately 2 to 3.5 per 1000 live births (1). By presenting this epidemiologically rare case, we would like to emphasize the importance of family medicine in primary care also having information about rare diseases. In our case, our patient could not receive a diagnosis despite repeated hospital admission and was omitted because IHPS is a rare case.

Vomiting in IHPS is typically severe, non-bilious, and generally occur immediately after feeding. The fact that it happens immediately after feeding helps to exclude physiological gastroesophageal reflux (GER) disease, which occurs 10 minutes or more after feeding. As a matter of fact, in previous hospital admissions of our case, the vomiting of our patient was interpreted in favor of physiological GER. In our case, vomiting was non-bilious and projectile, occurring within 1-2 minutes after feeding.

The patient's standing direct abdominal X-ray showed that there was no gas passage from the stomach to the intestines. Based on the available physical examination and laboratory light, abdominal ultrasound was performed with the preliminary diagnosis of hypertrophic pyloric stenosis. Abdominal ultrasound 'The pylorus length increased significantly by 30 mm, diameter by 16 mm and muscle thickness by 7 mm. The stomach was highly distended and no passage into the pylorus was observed. The findings are consistent with hypertrophic pyloric stenosis.' in the form have been reported.

A patient diagnosed with hypertrophic pyloric stenosis was consulted with the pediatric surgery clinic after correcting the existing electrolyte imbalance with maintenance solution containing 5% dextrose 0.45% sodium with potassium.

Dehydration and electrolyte disturbances can be seen in infants with IHPS due to vomiting and malnutrition. Typical electrolyte disturbance is hypochloremic hypokalemic metabolic alkalosis. In our case, the patient had moderate dehydration, oliguria, and hypochloremic hypokalemic metabolic alkalosis. It was pH: 7.68, potassium: 2.6, chlorine: 90. Other biochemical parameters were within the normal range.

On physical examination, dehydration was evident. When we detected stomach distension and the 'olive sign', which is a guide for IHPS, we strengthened our definition. As in our case, we approached our diagnosis by not skipping the detailed physical examination in the primary care of an infant who came with vomiting.

The sensitivity and specificity of ultrasonography for IHPS is above 95% in experienced hands (5). The pyloric muscle thickness measured by ultrasound is 3-4 mm, the pyloric muscle length is 15-19 mm, the pyloric diameter is 10-14 mm, which indicates normal

ranges (6). In our case, pyloric muscle thickness was 7 mm, pyloric length was 30 mm, and pyloric diameter was 16 mm. Values were found to be significantly increased.

Vomiting in infants can have many causes. The most common cause is gastroesophageal reflux (GER), which is mostly physiological in newborns. When the patient is not evaluated holistically due to the frequent occurrence of GER disease, the diagnosis of IHPS may be delayed and the patient's clinic may become serious during this time. Some other causes of vomiting in infants can be milk protein intolerance, ileus, liver diseases, metabolic diseases, adrenal crisis.

Infantile hypertrophic pyloric stenosis is a disease that causes dehydration, electrolyte disorders, acid-base imbalances, which can cause to death if the diagnosis is delayed and the treatment is not performed surgically. In the case we presented, we made a holistic assessment of the patient's clinic and physical examination, making the diagnosis of IHPS and ensuring that the treatment was performed without increasing the severity of the disease.

Early diagnosis may be life saving in IHPS. Physical examination and imaging methods are used in the diagnosis. The 'olive sign' can be seen in most cases. A family physician should be able to diagnose and regulate the treatment of uncommon diseases like IHPS in primary care. In this case, the palpated olive sign played a key role in the diagnosis.

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