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A Case Report: Hyperthrophic Pyloric Stenosis In 2-Months Old Boy

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ABSTRACT

Hypertrophic Pyloric Stenosis (HPS) refers to a narrow pylorus with clinical presentation is projectile and non-bilious vomiting. It occurs at the age of 2-8 weeks, with the case ratio between male-female is about 4:1. Ultrasound and barium meal are modalities to make the diagnosis. Reported a case 2-months old boy, who had chief complaint recurrent projectile and non-bilious vomiting. Ultrasound was performed with result thickening of pyloric with 6 mm of diameter. The patient has done pyloromyotomy. Patient suffered from post operative emesis which is still within normal limits and no other complication.

1. Introduction

Hypertrophic Pyloric stenosis (HPS) is the most common gastrointestinal disease in the first few weeks of life. HPS refers to a pylorus that is narrow. The male to female ratio is about 4:1. It is occurring at the age of 2-8 weeks. The clinical presentation is projectile and non-billious vomiting. Hypertrophic Pyloric stenosis is due to hypertrophy of the pyloric sphincter. The lumen of the pylorus is narrower, and less food is able to pass through.

Hirschsprung wrote the first complete description of hypertrophic pyloric stenosis (HPS) in 1888. He believed the disease was congenital and represented fetal pyloric development failure. In 1907, Although this curious disease is treated easily with surgery, its etiology remains undetermined. The exact etiology of the condition is unknown, but it carries a multifactorial pattern (environmental and genetic). The most common risk factors are family history, gender, younger maternal age, being a firstborn infant, and pattern of feeding. The generalized occurrence risk for siblings is 5-9%. Associated congenital anomalies are reported in 6-20% of patients with pyloric stenosis. A rare association with developmental delay has also been reported.

There are many modalities to help make the diagnosis. Radiologists have been using ultrasound (US) to investigate HPS since 1977, and it is the reference standard for diagnosis. The other modalities to help the diagnosis is the barium meal, but have some weakness. Barium meal examination only perform if the USG can't help the HPS diagnosis.

Pyloromyotomy remains the standard of treatment, and outcome is excellent. The best surgical outcome and lowest complications are more likely when the surgeon has specialist pediatric surgical training. Pyloromyotomy can be performed by open or Endoscopic. Endoscopic pyloromyotomy is a simple procedure and can be performed as an outpatient procedure. Recently, endoscopic balloon dilatation of hypertrophic pyloric stenosis after failed pyloromyotomy has been used with greater frequency. Several other approaches have been described. A supraumbilical curvilinear approach has gained popularity with good cosmetic result.

The purpose of this case presentation to report of a 2-month old boy who developed HPS, including a detailed review on diagnosis and treatment.

2. Case Report

A 2 months 13 days old treated with chief complaint Recurrent vomiting since the age of 11 day old, frequency 5-6 times/day, ¾-1 teaspoon/time contains with breast milk, vomiting occurred 5-10 minutes after feeding. At the age of 3 weeks, the frequency of vomit was increasing and projectile, 8-10 times/day, 1½ -2 teaspoon/time contains breast milk, occurred 5-10 minutes after feeding. 5 days before hospitalized, vomit was increasing, 10-20 times/day, 2-3 tablespoon/time. Breathlessness 5 days ago after vomiting, no wheezing, unaffected by weather or food. History of fever 5 days ago, not high, it resolved in two days. Patient just got breastfeed on demand for intake.

On physical Patient looks moderately ill, blood pressure 100/60, heart rate 140 times per minute, respiratory rate 50 times per minute, body temperature 36,6 ^{o}C, body weight 5.400 gr, body weight before sick was 5.900 gr, rehydrated body weight was 5800 gr, body height 58 cm, impression good nurtuional status. Physical examination of the skin, eyes, neck, lungs, abdomen and extremities did not reveal any abnormalities.There were mild depressed fontanella, mild sunken eyes and mouth's mucous was dry. On lung examination showed minimal retraction on subcostal and minimal rhonci on apex of lung, On the abdominal examination there was olive sign (+) and turgor slowly returned. No abnormality found in genitalia and extremities.

In laboratory examinations showed result hemoglobin 9.8 g / dl, leukocytes 20.350/mm3, differential count 0/3/14 (segment and band)/76/7, platelets 195.000/mm3, hematocrit 37%, MCV 84 fl, MCH 28 pg, PT 13 seconds, APTT 25 seconds, urea 6 mg/dl, creatinine 0.3 mg/dl, instant blood sugar 98 mg/dl, sodium 138 mmol/l, potassium 3.6 mmol/l, random blood glucose 113 mg/dl, with impression leukocytosis. Abdominal X-ray 2 position (Fig 1) show no multiple air fluid level and free air and widening of intestine.

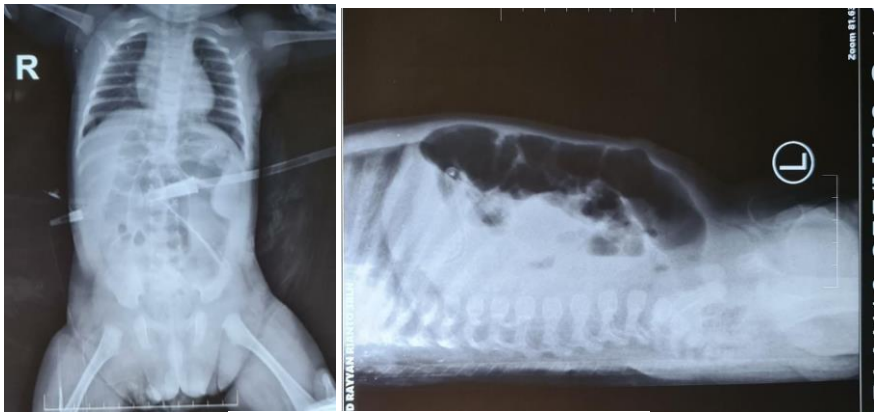

Figure 1. Abdominal X-Ray 2 position

Abdominal ultrasound (Fig 2) was performed and showed the pyloric muscle is 6 mm thick and 19 mm length, with impression suspected hyperhtrophic pyloric stenosis.

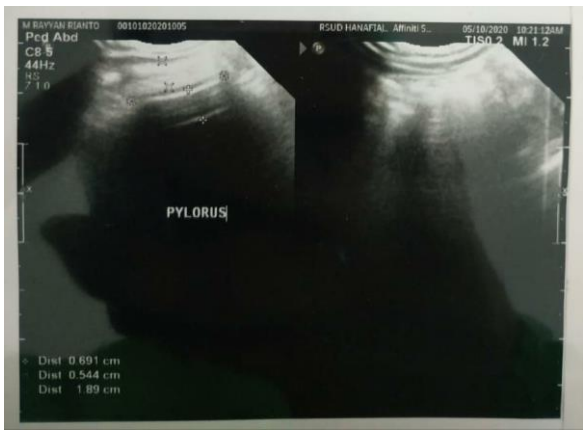

Figure 2. Abdominal ultrasound

Patient diagnosed with Suspect Hypertrophic pyloric stenosis, mild to moderate dehydration due to recurrent vomiting, aspiration pneumonia and susp COVID-19. Patient got treatment with temporary fasting, oxygen 1 liter/minute, IVFD D5-NS 200cc/kgBW/day, Ceftriaxone 1x500 mg IV and plan to give paretenral nutrition after rehydration achieved.

Patient got rehydrated and breathlessness got resolved on the day 2 hospitalization. Patiet was given fluid with dextrose 12.5% 21cc/hour with GIR 8.7 gr/kg/minutes and protein 0,5gr/kg/day. Blood glucose was monitored very day with normal limit. On the day 5 of hospitalization pyloromyotomy was performed. Hypertrophy was identified and incision in the

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anterior pylorus to the pre pyloric vein was performed until we found pyloric mucose bulging (Fig 3). Post operative patient got emesis and got dehydrated. On the day 7 of hospialization patient got rehydrated and well intake tolerance. Patient start to got breastfeed on demand and discharged on the day 8 of hospitalization.

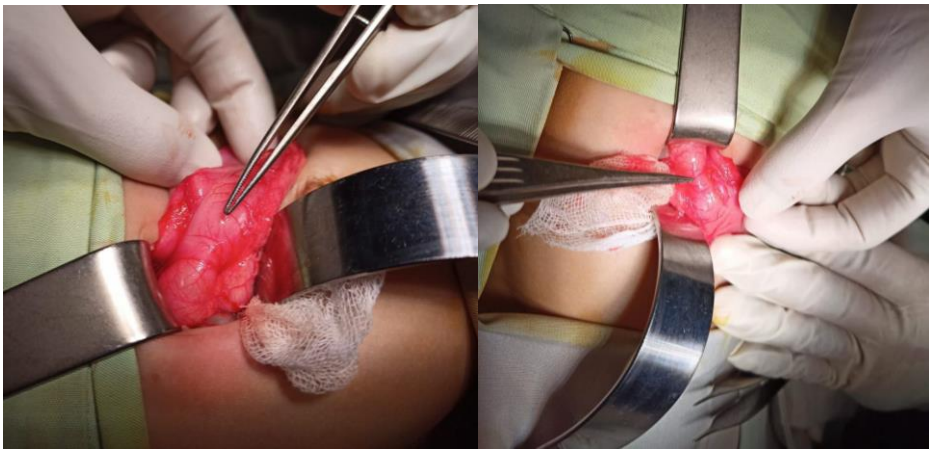

Figure 3. Pyloromyotomy

The patient controlled to pediatric and pediatric surgery clinic in Dr. M . Djamil hospital. there was vomiting 2-3 times/day after breastfeed for first 3 days at home and the healing wound was good. The body weight was 5,6 kg. Patient was observed and planned to control in 1 week. On the second control, there was no vomiting, patient got breast feeding on demand with body weight 5,8 kg.

3. Case discussion

Pyloric stenosis is a common pediatric surgery emergency. It involves both narrowing and lengthening of the pylorus due to hypertrophy of the pylorus muscle. The pyloric canal lengthens, the whole pylorus thickens, and the mucosa becomes oedematous causing functional obstruction of gastric outlet. As this diagnosis is most often found in the first few months of life, it is often referred to as infantile hypertrophic pyloric stenosis (IHPS). The incidence has been found to occur in 2-4 in 1000 live births. It is common in males than female (4:1). The condition is commonly seen between 2 and 12 weeks and is rarely seen in babies over 6 months of age. The main symptom of this condition, distinguishing it from other gastrointestinal conditions, is that of non-bilious, projectile vomiting after feeding, usually occured 10-30 minutes after feeding and progressively worsens. It has been found that there is a degeneration of intramuscular ganglion cells in Auerbach's plexus, along with the accretion of lysosomes and cytoplasmic bodies in many of the axons. Additionally, the ganglion cells appear reduced in number and smaller. has suggested that due to both the degeneration and consequent reduction in ganglia cells, Auerbach's plexus is ineffective, causing a reduction in neural activity, leading to asynchronous contraction of the pyloric muscle. As contractions are asynchronous, they increase in an attempt to produce a successful contraction, which is thought to lead to hypertrophy of the circular muscle, and hence HPS. The longer the condition progresses, the more severe the symptoms become. If not treated in time, infant is severely dehydrated and has decreased urine output.[1]–[3] This suitable for the onset, sex and clinical manifestation for HPS in this patient.

Physical examination in this patient was found sunken eyes, and slow return turgor that indicating dehydration. We also found olive sign in this patient. During clinical examination, palpation of the hypertrophic pyloric muscle, which is referred to as an olive because of its size and shape, known as palpating the olive. The mass is firm, movable, approximately 2 cm in length, olive shaped, hard, best palpated from the left side, and located above and to the right of the umbilicus in the mid epigastrium beneath the liver's edge. The olive is easiest palpated after an episode of vomiting. It has a 99% positive predictive value.[4]–[6] Failure to palpate the pylorus requires

further workup to clarify the cause of vomiting. The differential diagnosis includes gastroenteritis, food allergy, gastroesophageal reflux, pylorospasm, antral web, pyloric duplication, ectopic pancreatic tissue in the wall of the pylorus, and vomiting occasionally accompanying adrenogenital syndrome, metabolic disorders, and increased intracranial pressure.

This patient was undergo pyloromyotomy for definite therapy. The preferred treatment for HPS is surgical intervention. Surgical correction has been so consistently successful that the treatment of choice for HPS is the Ramstedt pyloromyotomy. It has been the standard treatment of HPS for decades. Although the approach may differ based on the individual surgeon's preference, the pyloric muscle is pulled through an incision in the abdominal wall. A longitudinal incision is made through the muscle with blunt dissection to the submucosa on the anterior surface of the pylorus. The pylorus is then returned to the abdominal cavity, and the abdominal incision is sutured. Most patients have excellent short-term and long-term outcomes. and mortality has been virtually eliminated with the use of appropriate fluid resuscitation, improvements in anesthesia, and a standard surgical approach. Muscle thickness returns to normal within 4 weeks, and is associated with heal-ing of the pyloric muscle and return of function.[7] Laparoscopic pyloromyotomy (LP) was first described in 1990, and it is increasingly the surgical treatment of choice as laparoscopic technology has improved. However, it remains controversial whether LP is superior to open pyloromyotomy. Sola and Neville performed a systematic review and meta-analysis of laparoscopic versus open pyloromyotomy. Patients who underwent LP had lower total complication rates mostly because of fewer wound complications, shorter time to full feedings and shorter postoperative lengths of stay.[8]

After surgery patients was still vomiting for 7 day, but infrequent. After that patient was gain condition and tolerate formula milk. Although 30% to 90% of patients will have some degree of postoperative emesis, this typically resolves spontaneously within the first week. Most commonly, this is due to gastroesophageal reflux (24%-31%) but it can be secondary to incomplete myotomy (0-6%). It has been suggested that the laparoscopic approach may be a risk factor for inadequate myotomy, but this is likely related to surgical experience with this technique. Antireflux measures and medications usually control the symptoms. Those patients who are refractory to medical therapy or have persistent projectile nonbilious emesis beyond 10 days should be suspected of having an inadequate myotomy. [4],[7],[9], [10]

4. Conclusion

Hypertrophic Pyloric Stenosis (HPS) refers to a narrow pylorus with clinical presentation is projectile and non-bilious vomiting. Patient usually come to hospital with dehydration. In severe condition it can caused othe complication such as aspiration pneumonia. A proper history, physical examination and supported by abdominal ultrasound can make the diagnosis correctly. Pyloromyotomy is a standard procedure for HPS. The success rate of this procedure is quite high almost 100%. The most common post operative complication is post operative emesis. It usually resolved in 1-2 weeks. If this continues, other causes must be considered.

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