Short Report

Utility of Endoscopy in Infantile Hypertrophic Pyloric Stenosis

H. A. Cheema
Department of Paediatric Gastroenterology-Hepatology, The Children's Hospital and the Institute of Child Health, Lahore.

Introduction

Hypertrophic pyloric stenosis (HPS) is a common cause of non-bilious vomiting in infants. In USA, operation for HPS is one of the commonest surgical procedure performed on infants.[1] Etiology remains poorly understood. A recent epidemiological survey from Sweden[2] has noted a distinct difference in geographical distribution suggesting an environmental causation. A palpable pyloric 'tumor' is present in majority of the cases although in a recent US series[3] this physical sign was noted in only 23% infants on diagnosis.

Both barium meal and ultrasonography are helpful diagnostic investigations.[4,5] Accuracy of ultrasound has been reported from 29.6% to 99%.[6-9] When the diagnosis is in doubt upper GI endoscopy can be very helpful in confirming the diagnosis.[10-12] This is a report of an initial experience with use of upper GI endoscopy in the diagnosis of HPS from a specialist pediatric GI unit.

Patients, Methods and Results

Over a one year period (March 2001 to February 2002), 10 infants with protracted vomiting and suspicion of HPS were referred to the Pediatric Gastroenterology-Hepatology department of the Children's Hospital, Lahore. This is a tertiary referral unit and only children with doubtful diagnosis were referred by clinicians from other parts of the city or the province. Thus this series represents a selected group of patients with equivocal clinical picture or imaging test results. Data was prospectively collected noting the sex, age at first symptom, age at diagnostic endoscopy, presence of a palpable pyloric 'tumor', result of barium and ultrasound studies and findings on endoscopy. A 5 mm Olympus endoscope was used and all except one endoscopies were done under local anesthetic spray and I/V sedation with Valium.

On endoscopy, 8 of these infants were confirmed to have HPS. There were 7 males and one female. These infants started to have non-bilious vomiting from age 1½ - 3 weeks (mean 2.6 weeks). Mean age at diagnostic confirmation by endoscopy and pyloromyotomy was 6.8 weeks (range 6-8 weeks). Thus there was an average delay of 4.3 weeks (range 3-5 weeks) between onset of symptoms and confirmation by endoscopy followed by operation.

Two of 8 infants had palpable pyloric tumors although there was observer disagreement in 2 patients whether the tumor was palpable or not. Barium meal was performed in 2 patients. One had features of pyloric obstruction while the other was reported as normal. Ultrasound was done in all patients. It was reported as normal in 4 patients. One patient had three ultrasound examinations and two were reported normal while third was reported to have features of hypertrophic stenosis. This infant was born preterm at 36 weeks gestation and vomiting started 4 weeks later. His birth weight was 1.8 Kg. He remained admitted for one month in a teaching hospital elsewhere before referral and confirmation of diagnosis by endoscopy. His weight had reduced to 1.7 kg at 12 weeks age.

On endoscopy, 6 of 8 patients had a "cervix like look" in the pyloric area while other two had narrowing of pylorus and the endoscope could not be negotiated through it. Two patients had features of severe concomitant esophagitis. All 8 patients had pyloromyotomy on day of endoscopy after correction of metabolic derangements and stopped vomiting within 24 hours of operation. No complications were observed either from endoscopy or pyloromyotomy operations. Apart from these 8 patients, two further patients who had normal endoscopic findings in pyloric area, were treated medically, one for cow milk allergy and the other for reflux esophagitis and they both responded to medical management and stopped vomiting.

Comments

HPS is one of the commonest abdominal problems in infants. It affects predominantly male sex and typically starts with non-bilious projectile vomiting in 3rd week of life. Most of the patients have straightforward diagnosis and results of pyloromyotomy are very satisfying. However if the diagnosis is delayed, the infant rapidly looses weight and becomes emaciated. In the current patients series there was an average delay of over a month, which is alarming. A previous series[13] also noted symptoms for an average of 3.2 weeks before diagnosis.

Specific pyloric findings have been described on ultrasound examination with high accuracy rate. As ultrasound is a highly operator dependant investigation, the result may be misleading. In this selected series ultrasound was found to be highly unreliable test being reported as normal in half of all patients. The three other series reported on this subject in local journals[5,9,13] provide conflicting

evidence. While Ahmed[5] from Lahore reported positive findings in 25 of 26 (96.1%) patients, Ahmed et al[9] from Multan reported only 29.6 % positive results and concluded that ultrasound played little role in diagnosis of their patients. Akhtar and colleagues[13] from Karachi reported that diagnosis was largely made clinically in their 18 patients. This variation may be related to inexperience of some of the ultrasonologists outside of a pediatric practice setting.

In doubtful or equivocal cases, endoscopy was found to be useful and safe method for confirmation of diagnosis of HPS. De Backer and colleagues[12] found endoscopy to be 97% accurate in HPS. Others[10,11] have similarly found it safe and extremely useful addition to the armamentarium for diagnosis of HPS. The author independently noted the "cervix like look" of the pylorus on endoscopy. However on review of literature, it has been found to be previously described in adult hypertrophic pyloric stenosis as the "cervix sign".[14] Additionally, endoscopy is useful in diagnosing other conditions like esophagitis, gastritis or pyloric web, which may be the cause of persistent infantile vomiting.

Since delay in diagnosis can cause severe malnutrition and mortality in infants, it is recommended that endoscopy be requested early in infants in whom diagnosis cannot be confirmed by clinical findings and imaging modalities of ultrasound and barium meal.

References

1. Hulka F, Harrison M W, Cambell TM, et al. Complications of pyloromyotomy for infantile hypertrophic pyloric stenosis. Am J Surg 1997;173:450-2.
2. Hedback G, Abrahamsson K, Husberg B, et al. The epidemiology of infantile hypertrophic pyloric stenosis in Sweden 1987-96. Arch Dis Child 2001;85:379-81.
3. Hulka F, Campbell TJ, Campbell JR, et al. Evolution in the recognition of infantile hypertrophic pyloric stenosis. Pediatrics 1997;100:E9.
4. Murtagh K, Perry P, Corlett M, et al. Infantile hypertrophic pyloric stenosis. Dig Dis 1992;0:190-8.
5. Ahmed MZM. Ultrasound scan in the diagnosis of infantile hypertrophic pyloric stenosis. Pak J Surg 1996;12:38-40.
6. Ito S, Tamura K, Nagae I, et al. Ultrasonographic diagnosis criteria using scoring for hypertrophic pyloric stenosis. J Pediatr Surg 2000;35:1714-8.
7. Godbole P, Sprigg A, Dickson JA, et al. Ultrasound compared with clinical examination in infantile hypertrophic pyloric stenosis. Arch Dis Child 1996;75:335-7.
8. Neilson D, Hollman AS. The ultrasonic diagnosis of infantile hypertrophic pyloric stenosis: technique and accuracy. Clin Radiol 1994;49:246-7.
9. Ahmed UF, Pasha HK, Bukhari KA. Changing trends in hypertrophic pyloric stenosis. J Surg Pak 1998;3:8-9.
10. Liacouras CA, Cook-Sather SD, Schveiner MS, et al. Endoscopic findings in hypertrophic pyloric stenosis: appearance in classic and evolving disease. Gastrointest Endosc 1997;45:371-4.
11. Donovan GK, Yazdi AJ. The endoscopic diagnosis of pyloric stenosis. J Okla State Med Assoc 1996;89:58-9.
12. De Backer A, Bove T, Vandenplas Y, et al. Contribution of endoscopy to early diagnosis of hypertrophic pyloric stenosis J Pediatr Gastroenterol Nutr 1994; 18:78-81.
13. Akhtar J, Mugheri A, Aziz A. Infantile hypertrophic pyloric stenosis - a clinical audit. J Surg Pak 1998;3 24-6.
14. Dye TE, Vidals VG, Lockhart CE, et al. Adult hypertrophic pyloric stenosis. Ann Surg 1979;45:478-84.