

The Role of Ultrasound in the Diagnosis of Infantile Hypertrophic Pyloric Stenosis

Infantile Hypertrophic Pyloric Stenosis (IHPS)

IHPS is the most common gastrointestinal disease affecting infants.¹ It is a narrowing and elongation of the pyloric sphincter in the stomach which prevents food and other contents from emptying out of the stomach like normal (see Figure 1).¹ It occurs most often between 2-12 weeks of age, and is more common in males.² It occurs approximately in 3 out of 1,000 live births. The most common treatment for IHPS is the surgical repair of the thickened pylorus referred to as pyloromyotomy.³



Figure 1. An image depicting infantile hypertrophic pyloric stenosis which is seen in the thickened pyloric sphincter muscle of the stomach along with a narrow opening between the stomach and duodenum.⁴

With the use of ultrasound physicians are able to quickly and accurately diagnose infants with IHPS. It has been used to achieve the correct diagnosis in over 90 percent of cases of IHPS.² In the years before medical imaging was advanced enough to diagnose diseases, IHPS was diagnosed typically through palpation of the olive-sized pyloric muscle in the abdominal area.⁵

Role of Diagnostic Ultrasound

The features found include hypoechoic pyloric muscle mass, little or no stomach emptying, lack of relaxation of the muscle, pockets of fluid trapped in the mucosal layers, and the physical pylorus muscle is bigger than normal.⁵

When the pyloric muscle is thicker than 2mm and the pyloric channel is longer than 12mm the pyloric sphincter is considered pathological (see Figure 2 and 3).¹

Color doppler flow imaging is used to view blood flow through and around the pylorus muscle, and view liquid passing, or not passing, through the pyloric sphincter.⁶

Ultrasound Diagnosis of IHPS

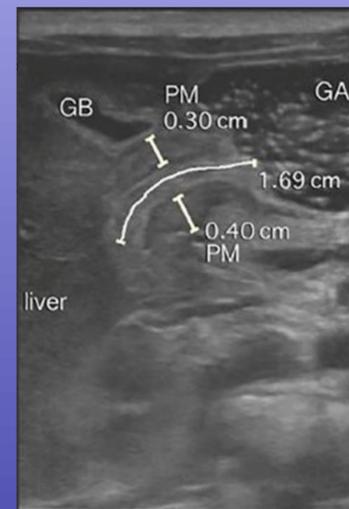


Figure 2. Shows the long axis of an ultrasound which shows the thickened, elongated pyloric channel. The pyloric muscle (PM) thickness is greater than 2mm on either side of the pyloric channel which proves this is a pathological condition.⁷



Figure 3. Shows the short axis of an ultrasound which also shows that the thickened pyloric muscle is greater than 2mm.⁷

Point-of-Care Ultrasound

In a particular case study that was reported they show the ability of ultrasound to help emergency room doctors make quick diagnosis of IHPS and get the infants the help they need. This ultrasound equipment is called point-of-care ultrasound (POCUS) and it allows the physicians to make decisions and diagnosis without delay in an emergency setting.⁷ ER doctors using this type of ultrasound equipment, even with limited training, were able to diagnose infants with IHPS almost 100 percent of the time. It has also been shown to aid in surgeons attempts to get accurate measurements of the pyloric muscle before surgery which leads to quicker surgery and recovery time.⁷ Without ultrasound IHPS would be much harder to diagnose and would leave many parents and physicians questioning what was happening to these infants.

References

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