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Research Article

**ULTASOUND COGENCY IN CASES OF HYPERTROPHIC  
PYLORIC STENOSIS**<sup>1</sup>Dr. Fatima Maham Iqtidar, <sup>2</sup> Dr. Iram khan, <sup>3</sup> Dr. Arva Zainab<sup>1</sup>Quaid -e- Azam Medical College,<sup>2</sup>Army Medical College Rawalpindi,<sup>3</sup>Quaid -e- Azam Medical College**Abstract**

**Objectives:** The objective of this research work is to assess the authenticity of ultrasound for the detection & elimination of PS (pyloric stenosis) in the children less than two years with NBV (nonbilious vomiting).

**Methodology:** In this transverse research work, four hundred and forty-four successive infants with medical notion of PS were assessed with the help of the ultrasound & classified as having PS or not on the basis of measuring features as thickness of the muscles & length of the canal of pylorus. Surgery confirmed the true findings of previous work. Confirmation of the negative findings carried out with the help of follow ups. The measurements of sensitivity, preciseness & specificity carried out.

**Results:** There were hundred percent sensitivities, preciseness & specificity of the ultrasound if thickness of pyloric muscle was greater than three millimetres chose for detection of the problem. When the thickness of the muscle greater than four millimetres was in utilization, sensitivity, preciseness & specificity were ninety six percent, more than ninety nine percent & hundred percent respectively.

**Conclusions:** Ultrasound is very responsive and precise if three millimetres thickness of the pyloric muscle used as the point of cut off. Ultrasound is a procedure of the choice for the detection of the problem & mitigation of the PS in infants.

**Key Words:** Ultrasound, Macrolide, Hypertrophic Pyloric Stenosis, Hindrance & Malrotation, muscle, sensitivity, specificity, accuracy, mitigation.

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**INTRODUCTION:**

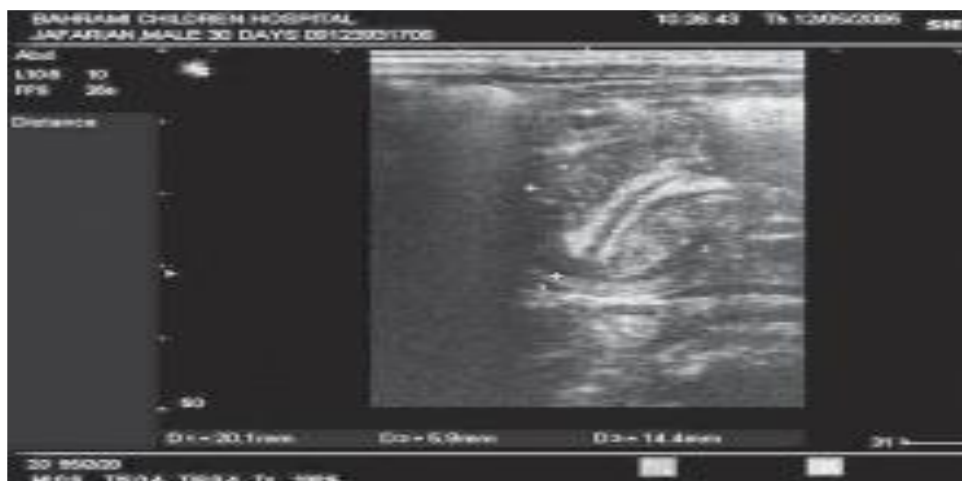
The detection of the PS in the infants essentially has been downgrade to ultrasound in some medical centres. There is a disagreement about the functioning of the ultrasound particularly when detection is depending upon the thickness of the muscles. HPS (Hypertrophic Pyloric Stenosis) is reason of non-bilious vomiting between 1<sup>st</sup> week & 5<sup>th</sup> month of life [1, 2]. The occurrence of Hypertrophic Pyloric Stenosis enhances in male sex, in 1<sup>st</sup> child, race of white, geography, Blood groups of O & B and usage of the macrolide in the duration of pregnancy [2, 3]. It has some detection at the infancy as pylorospasm, GER (gastro esophageal reflux), stenosis of duodenal or complete hindrance & malrotation [1, 2, 4]. Medical examination, measurement of the gastric residue, use of endoscopy, UGI (upper gastrointestinal series) & currently ultrasound is in use for the detection of this problem [2, 4, 5].

Medical detection of Hypertrophic Pyloric Stenosis has been prepared by olive palpation, showing the muscle of hypertrophied (forty nine percent to eighty seven percent) [2, 4]. The utilization of the ultrasound in the detection of the HPS was 1<sup>st</sup> stated in the year of 1977 by Teele & Smith by direct seeing the muscle of pylorus [6]. There is a disagreement on the elaboration of the problematic dimensions of the muscle of hypertrophied [1, 4, 7, 8]. Four, three & 3.5 millimetres are the cut-off

points used for the thickness of the pyloric muscle [1, 2, 4, 8, 9]. Due to the association of the hypertrophic pyloric Stenosis occurrence to the race & geographic districts, this research work was arranged for proper measurement of the pylorus in the infants of Pakistan.

**METHODOLOGY:**

About 485 successive infants with NBV were checked in the Bahawal Victoria hospital Lahore. This research work started in October 2011 and lasted up to November 2017. Exclusion of 41 patients carried out because they found with some other serious problems. Ultrasound of remaining four hundred and forty four patients carried out in this centre. Images were gathered on Siemens sonoline two & G fifty US units with the utilization of the five, ten or 7.5 megahertz transducers. A specialist experienced radiologist performed all the examination. The calculations of the pylorus carried out from the centre, explained as the place of the pyloric lumen & detected by the sign of double track of mucosa of pylorus to prevent imprecision from peripheral scans. The measurement of the canal of pylorus carried out from the duodenal cap base to gastric antrum. The measurement of the canal carried out from the muscles outer edges. The measurement of the thickness conducted from the outsider wall of the muscle of pylorus to the external corner of the mucosa as described in Figure-1.



*Fig-1: Longitudinal sonogram of the pyloric channel in an infant with pyloric stenosis*

A + detection of hypertrophic pyloric stenosis carried out when an unrelenting mass like olive was available in the location of the channel of pylorus, with a three centimetres thickness of the muscle or greater than this as displayed in Figure-1. The utilization of three millimetres carried out to involve more patients for surgery. The confirmation of the + results carried out with the help of surgery. The – detection of the hypertrophic pyloric stenosis was created if the thickness of the normal pylorus was two to three millimetres as shown in Figure-2.

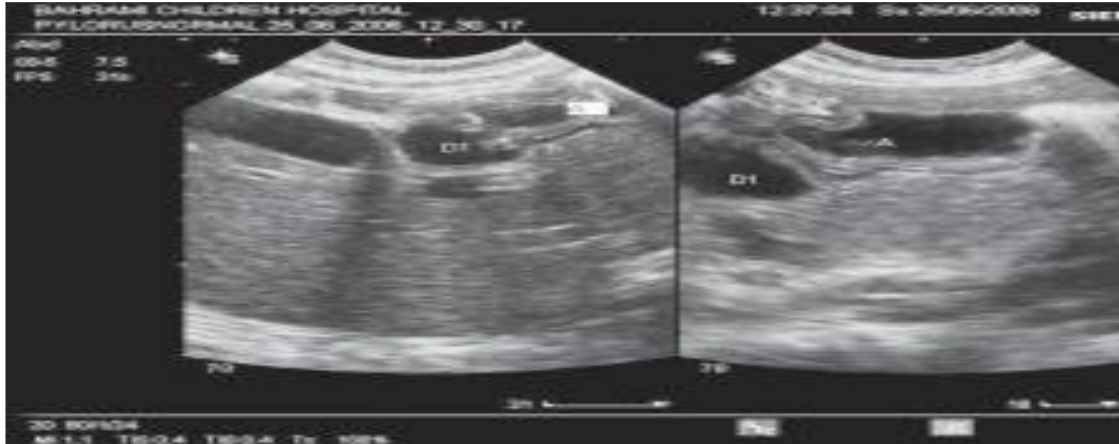


Fig-2: Longitudinal sonogram of normal pylorus (P) in relaxed (left sided image) & closed (right sided image)

Ultrasound performed for the confirmation of pylorospasm or partial early hypertrophic pyloric stenosis. Six week follow up carried out for the confirmation in – patients. The determination of information of demography, pregnancy duration, physical examination, group of blood & simultaneous problems carried out.

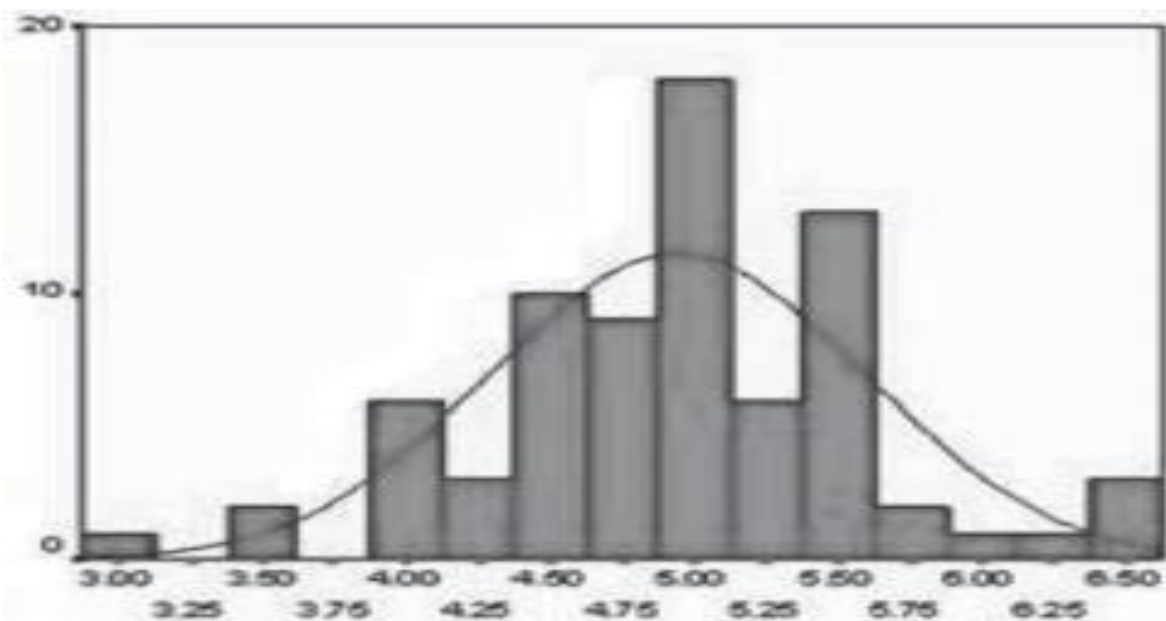


Fig-3: Histogram of pyloric muscle

### RESULTS:

About 444 patients with NBV were examined with the help of ultrasound. There were 75 patients with + hypertrophic pyloric stenosis with three millimetre thickness of pylorus as discovered by ultrasound. Confirmation of all the patients carried out with the help of the surgery. The thickness of pylorus was from two to three millimetres without symptoms of hypertrophic pyloric stenosis. Within fourteen days, the thickness of the pylorus reduced to less than two millimetres. Normal pylorus was present in 360

patients. Confirmation gained in the follow up. GER was present in 88 patients, malrotation was present in two cases & one patient was the victim of duodenal web. The length of pylorus was from sixteen to twenty eight millimetres, width more than eight to seventeen millimetres & thickness was from three to about seven millimetres. The histogram about the thickness of the muscle of pylorus is available in Figure-3.

Hypertrophic pyloric stenosis + 75 patients have the

age of sixteen days to 6 months in which twelve were girls and sixty three were boys. The average weight of the patients was  $3303.60 \pm 499.89$  grams. With the selection of three millimetres thickness or more for the detection of hypertrophic pyloric stenosis sensitivity, preciseness & specificity were hundred percent. When the thickness of the muscle was more than four millimetres, sensitivity, preciseness & specificity were ninety six percent, 99.32% & hundred percent respectively.

#### DISCUSSION:

HPS in the infants is the outcome of a malfunction in the contraction & relaxation of the pylorus muscle which comes with the outcome of hypertrophy [2, 4, 9]. For the diagnosis of the hypertrophic pyloric stenosis, precise measurement of canal of antropylorus & its related muscle is very vital. Cohen & Haller concluded the measurement of the thickness, length & width of the pyloric muscle for the detection of the hypertrophic pyloric stenosis. The most authentic measurement is the thickness of muscle & least reliable measurement is of width of the muscle [4, 10]. The average length of the pyloric muscle in the research work of Assefa on thirty-nine patients was about nineteen millimetres [11]. Wilson & Vanhoutte concluded the length greater than twenty millimetres for the detection of the hypertrophic pyloric stenosis [12]. This research work displays 20.22 millimetres as the average length in the group of hypertrophic pyloric stenosis. Strauss declared the width of pylorus as abnormal if it was greater than fifteen millimetres [13]. Fourteen millimetres was the width of pyloric muscle in the study of Assefa [11].

The average thickness of pyloric muscle in the study of Assefa was 4.46 millimetres [11]. In the case work of Blumhagen, the thickness is greater than four millimetres [14, 15]. Swischuk concluded the thickness of three millimetres or greater than this for the detection of the hypertrophic pyloric stenosis [8]. In this research work, the average thickness of three pyloric muscle was  $4.94 \pm 0.65$  millimetres similar to various research works. The results of this research work are same with the outcome of the Marta Hernanz Schulman research work in which preciseness, sensitivity & specificity were hundred percent [7]. The information of demography as age of the patient & gender were same in this group with the previous works. O & B blood groups were very common in the hypertrophic pyloric stenosis patients of this research work [2]. In this research work, O+ forty four percent & A+ twenty percent were the most common groups of blood. Olive palpation in Oates & Macdessi research work was + in eighty

seven percent patients and it was forty eight percent in the duration of 1988-1991 [16]. Medica sign of olive was present in more than thirty three percent patients of this research work. In some other research work, the = sign of olive was from forty percent to hundred percent [10, 17].

#### CONCLUSION:

Ultrasound is very sensitive & precise if thickness of the pyloric muscle is three millimetres used as point of cut off. Ultrasound is a procedure of the choice for the detection & the mitigation of the stenosis of pylorus.

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