Pyloric Stenosis - Full Paediatric Clinical Guideline - Joint Derby and Burton

Reference no.: CH CLIN S12

Purpose/Introduction

To ensure a standardised approach to the management of babies with Pyloric Stenosis is achieved within the Children's Hospital.

Aim and Scope

To prevent any delay in the assessment and treatment of Pyloric Stenosis.

Definition

Pyloric stenosis is due to hypertrophy and hyperplasia of the pyloric muscle. Usual presentation is around two to eight weeks (mainly four to six weeks) of age with worsening projectile vomiting. The vomit is never bile stained and soon after the vomiting the infant is usually hungry.

Implementing the Guideline

Diagnosis & Investigations:

The diagnosis of pyloric stenosis is mainly clinical and, if necessary, can be confirmed by U/S scan.

1) Test Feed: Right upper abdomen is deeply palpated during a feed. In a positive test feed a "tumour" will be intermittently palpable deep in the right upper abdomen and gastric peristalsis visible on the left side of the abdomen.

2) Bloods: FBC, U&E, Cl, Blood Gas and Blood sugar:
As a result of loss of hydrogen and chloride ions in the vomit there is net gain of HCO3 in the body leading to a hypo-chloraemic alkalosis. Potassium is exchanged to save the hydrogen ions in the kidneys, which leads to hypokalaemia.

3) U/S of Abdomen: In pyloric stenosis the thickness of the pyloric muscle is >4mm and the length is >14mm *in term babies.*

4) Ba Swallow: Not always helpful.

MANAGEMENT AFTER DIAGNOSIS IS CONFIRMED:

1) Nil by mouth

2) IV cannula

3) Nasogastric tube on free drainage

4) Assess the percentage of dehydration

5) Correct dehydration and electrolyte abnormalities:

- If in shock give 10 mls/kg of 0.9% saline as a bolus and repeat if needed..
- Calculate the amount of fluid for rehydration and maintenance and replace over 24 hours with IV 0.9% Sodium Chloride/ 5% Glucose.
- Ensure creatinine and electrolyte results are reviewed after starting fluids, to also ensure potassium levels are checked and potassium content of IV fluids is reviewed.
- Repeat U&E in 6 – 12 hourly depending on the initial derangement.
- Continue with IV fluids of 0.9% saline/5%Glucose if biochemistry is severely deranged (HCO3 > 30 or pH > 7.5) or if there is a deterioration of U&E in spite of IV fluids.
- Repeat U&E and Blood sugars and *blood gases* 6-12 hourly or as clinically indicated.
- Replace NG aspirate with 0.9% saline + 10mmol KCL in 500mls. Aspirate 4 hourly and replace over the next 4 hours.
- Prior to surgery (Pyloromyotomy) plasma electrolyte, pH and bicarbonate should be normal. (HC03 < 30, Cl = 95 mmols/l).

6) Contact the Surgeons* and Anaesthetist and arrange for the infant to go to Theatre.

7) Post-op feeding to commence 6 hours post-operatively (see next page).

8) Post-operative vomiting can occur due to secondary oedema of the pylorus.

Persistent vomiting may be due to incomplete pyloromyotomy or other causes such as gastro-enteritis and gastro-esophageal reflux.

For Derby
**Designated surgeons for the surgery are those with elective lists and operate in Derby on minimum of 12 children a year under the age of 12 months, namely Visiting Nottingham Paediatric Surgeons and Mr John Quarmby (as per review guidelines drawn up by Visiting Nottingham Paediatric Surgeon). Surgery should be performed by one of these two surgeons in paediatric theatres semi-electively, with appropriate staff and timing.*
***(see Core Care Plan for Pyloric Stenosis).*

For Burton
Liase with Paediatric surgeons in Nottingham or Leicester Royal Infirmary or Birmingham childrens hospital.

POST OPERATIVE FEEDING IN PYLOROMYOTOMY PATIENTS - Care Plan

1. Commence feeds **6 hours** post-operative

2. Calculate feeds at 150 ml/kg/day

First feed: Half the volume of a normal feed (20 ml formula/EBM).
In breast fed babies 5 to 10 minutes on breast

Second feed: Minimum 2 hours later same as above (half feed)

Next feed: Minimum 2 hours later full feed or as tolerated.
If baby not wanting to feed contact medical team.

3. Continue feeding at minimum 2 hourly intervals regardless of mild to moderate vomiting. If the child is comfortable and settled there is no need to wake and feed every two hours but allow feeding on demand.

4. IV Fluids

First 6 hours post – Full maintenance fluids

After starting feeds – 1/2 maintenance fluids

Once on full feeds - Stop IV fluids

5. If vomiting very severe, return to 20 ml feeds and ask doctors to reassess.

6. Ready for discharge when:

- Tolerating full feeds with only mild to moderate vomiting ("tolerating" feeds is defined as taking two consecutive full feeds calculated at 150 ml/kg/day).
- Parents competent and confident to continue feeding at home.

Delay discharge in patients who live long distances away

References (including any links to NICE Guidance etc.)

Recovery after open versus laporascopic pyloromyotomy for pyloric stenosis; a double blind multicentre randomised controlled trial. (Hall J, Pacilli M, Eaton S, Reblock K, Gaines B, Pastor A, Langar J, Koivusalo A, Pakarinen L, Beyerlein S, Haddad M, Clarke S, Ford H, Pierro A.
Nurse Power: The recommendations of a completed audit loop of post operative feeding in pyloromyotomy. Motiwale S, Paul A, Gavens E. Presented at 42nd Annual meeting of Pacific Association of Pediatric Surgeons May 2009.
Ad Libitum feeding decreases hospital stay for neonates after pyloromyotomy. J Pediatr. Surg. 2002; 37:493-495
Ad Libitum feeding: Safely improving the cost-effectiveness of pyloromyotomy. J Pediatr. Surg. 2003; 37:1667-1668

Documentation Controls

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