Audit on Intussusception Reduction Service in PWH Radiology Department

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Background - Intussusception in Children

• Telescoping of bowel into itself
  – In children, usually ileocolic (ileum into colon)
• Successful radiological reduction
  – Prevent need of surgery in children
  – First-line treatment
    – Performed in QMH, QEH(&UCH) and PWH in HA setting
      • paediatric surgery support available
    – With earlier the reduction
      • higher chance of success and less complication rate
Setup for Pneumatic Reduction under Fluoroscopy Guidance in PWH

- Sphygmomanometer
- Pneumocolon set
- Hand pump
- Rectal tube (Foley’s catheter)
Workflow of Suspected Intussusception in PWH

• Diagnostic ultrasound performed by radiologists in X-Ray Dept to confirm intussusception
• Once intussusception confirmed, radiologist liaise with paediatric surgeon to arrange pneumatic reduction
• Patient will be directly transferred to fluoroscopy room to prepare pneumatic reduction rather than sent back to ward first and come down again
  • to avoid delay
The Standard and Our Target

• The Standard
  – successful rate > 70% should be achievable by non-operative reduction
    • According to a retrospective survey in UK in 1999

• Our Target
  – We aim at successful rate > 70%
Method

• All intussusception reduction cases
  – From Jan 2012 to December 2013 (2 years)
  – Identified by the Radiology Information System (RIS)
  – Radiology report and clinical Information reviewed by ePR
Referral Pattern

Referral Pattern-Direct admission from PWH vs transferred from other hospitals

- Transferred from Other Hospitals: 64%
- Directly admitted from PWH A&E Dept: 36%

Referral Pattern-By HA Clusters

- NTEC: 56%
- NTWC: 18%
- KWC: 24%
- Private Hospital: 2%
Time of Performing Pneumatic Reduction - Office vs Non-Office Hr

- Office Hour: 32%
- Non-office Hour: 68%
Time Interval Between Admission to Ward and Pneumatic Reduction

- Median time between ward admission & first reduction trial = 2 hours
- First pneumatic reduction attempted < 3 hrs in 30/45 (67%) children

1 child initially admitted to paediatric ward for fever & abdominal pain before transferring to paediatric surgery ward, >24 hrs between admission and reduction
Results – Patients and Procedures

• 45 children identified
  – Mean age = 1.97 year old (range 2.5 months to 7yo)
• Total 53 reductions in these 45 children
  – 6 children (13%) suffered from recurrent intussusception
    – 1 recurrence in 4 children
    – 2 recurrences in 2 children
    – i.e. Total 8 procedures (1x4 + 2x2) for recurrent intussusception
• All confirmed by ultrasound before pneumatic reduction
Outcome of Pneumatic Reduction

Percentage of Children with successful pneumatic reduction

34 CHILDREN with SUCCESSFUL pneumatic reduction 76%

11 CHILDREN with FAILED pneumatic reduction 24%

Pneumatic reduction successful in 76% of the children
Outcome of Pneumatic Reduction

Successful rate of pneumatic reduction procedures

42 SUCCESSFUL pneumatic reduction PROCEDURES 79%

11 FAILED pneumatic reduction PROCEDURES 21%

79% of the pneumatic reduction procedures were successful
Results – Complication rate and need of surgery after successful pneumatic reduction

• No complication (e.g. bowel perforation) observed
  – 1 child underwent diagnostic laparotomy to investigate intestinal obstruction
    • No perforation found, no bowel resection/repair needed
• Surgery avoided in 33/45 (73%) children
Results – Unsuccessful Pneumatic Reduction

- Pneumatic reduction failed in 11/45 (24%) children and 11/53 (21%) procedures
  - All underwent surgery
  - 4 children without lead points (36%)
    - pneumatic reduction performed < 2 hrs for them
  - Lead points in remaining 7/11 children (64%)
  - None of the unsuccessful procedures from recurrent intussusception occurred during our admission
    - Excluding 1 referral of unsuccessful reduction transferred from private hospital to us
Summary – Successful Rate

• Successful rate of intussusception pneumatic reduction in PWH comparable with / even better than international standard
  – May be due to pneumatic reduction procedures promptly carried out after admission
• No complication observed
Summary – Failed Pneumatic Reduction

• Lead points found in majority of failed pneumatic reduction (64%)
• Remaining failed pneumatic reductions without lead points (36%)
  – Pneumatic reduction carried out promptly (<2 hrs) for them after ward admission on retrospective review
• Recurrent intussusception occurred after admission all successfully reduced by pneumatic reduction
  – Worthwhile to re-attempt pneumatic reduction in recurrent intussusception
Reference


Thank you