paediatric WATCH

Lessons from the frontline

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Appendicitis: Getting it right…

An 11 year old girl was referred to emergency by her GP with a history of lower abdominal pain for four days. On assessment she had general abdominal tenderness with percussion and complained of pain when walking. She was administered paracetamol with good effect and was discharged home with a diagnosis of gastroenteritis. She returned the next day with focal tenderness in the right iliac fossa and was reviewed by a surgeon. The patient had an appendicectomy and was diagnosed with a perforate appendix with pus throughout her abdomen. She was discharged home after 5 days of intravenous antibiotics.

There are between 2,500-2,600 paediatric patients per calendar year that are admitted with a primary diagnosis of appendicitis in NSW. In 2017, approximately one third of these patients with a primary diagnosis of appendicitis were cared for in one of the 3 specialty children's hospitals leaving more than two thirds managed promptly and appropriately outside of the paediatric specialty hospitals[1]. During this period there were no SAC 1 incidents and only one in approximately 850 cases of appendicitis resulted in a SAC 2 incident.

Appendicitis is a common paediatric surgical condition, however the majority of children presenting with abdominal pain will not have appendicitis. Early identification can be difficult in children, however there are a few guiding principles.

Appendicitis is essentially a clinical diagnosis and repeated examination is useful to look for the persistence, or evolution of signs and evaluate a response to treatment[2].

It is important to observe the child's movements, gait, position and level of comfort.

Appendicitis must be considered as a possible diagnosis in a child presenting with severe abdominal pain. Taking a good history with an understanding of the pathophysiology helps differentiate between other conditions such as gastroenteritis or constipation.

The pain of appendicitis begins in the umbilical area when the appendix begins to become obstructed and/or inflamed. As the process evolves to the visceral (peritoneal) surface, the pain localises to the right iliac fossa and may become more constant. Vomiting, high fever and malaise may be evident. Children will often not want to move in the bed and will be unable to hop or walk comfortably.

If perforation occurs, peritonitis and septicaemia may be the presentation. Alternatively, the child with suspected sepsis needs to have a perforated appendix excluded. An increased duration of symptoms correlates strongly with perforation. It is rare for perforation of the appendix to occur in the first 12 hours from onset of symptoms and is most likely to occur after this time and commonly after 72 hours[3].

Some appendixes may be in an unusual position (retrocaecal) leading to atypical presentations. In preschool aged children, the signs and symptoms of appendicitis are generally less specific or well localised therefore vigilance and suspicion is needed with any presentations of unwell children with a history of abdominal pain.

Constipation in general should not be associated with fever or vomiting and should not have right sided, constant or nocturnal pain. Gastroenteritis typically has loose bowel motions and generalised abdominal pain with no features of peritonitis.

Lessons Learned

On review of incidents reported in the Incident Information Management System (January 2015 to July 2018), there were no SAC 1 incidents and eight SAC 2 incidents involving missed diagnosis of appendicitis. In half of these cases there was a diagnosis of gastroenteritis, with 6 resulting in a ruptured appendix and extended length of stay. With the exception of one, all involved re-presentations to an emergency department.

It is important to have a high index of suspicion for appendicitis in children re-presenting to emergency with abdominal symptoms. These children should be reviewed by a senior clinician experienced in assessing children with abdominal pain.

Diagnostic investigations should not delay resuscitation or surgical intervention if indicated. Parental concern is often an important indicator in identifying deterioration associated with a perforation or abdominal sepsis and must be addressed.

References

1. NSW Admitted Patient Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health. Data downloaded: 11 September 2018.

2. The Royal Children's Hospital Melbourne resource, viewed 21 December 2018, https://www.rch.org.au/clinicalguide/guideline_index/Abdominal_Pain_-_Acute/.

3. Rothrock, S.G, Skeoch, G., Rush, J.J. & Johnson, N.E., 1991, 'Clinical features of misdiagnosed appendicitis in children', Annals of Emergency Medicine, vol. 20, no. 1, pp. 45-50.

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