paediatric WATCH

Lessons from the frontline

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Diagnostic error in the child with an acute intracranial haemorrhage

A 2 year old girl with a known history of a blood clotting disorder presented to the Emergency Department (ED) with vomiting. The child's mother had made it known that her child had a clotting disorder and was at risk of an intracranial haemorrhage.

On arrival her Respiratory Rate (RR) was "between the flags", her Heart Rate (HR) was in the Yellow Zone, she had a Glasgow Coma score (GCS) of 15, was afebrile and given a triage category 3. Shortly after presentation, the patient was commenced on a trial of fluids and an anti-emetic was administered. The patient was assessed by the ED Resident and was given a diagnosis of gastroenteritis. She was discharged home and the parents were instructed to return if there was ongoing vomiting.

Approximately 8 hours after discharge, the mother represented with her child to another ED with ongoing vomiting. At triage her respiratory rate, oxygen saturations and heart rate were all "between the flags". Her GCS was 15 and she remained afebrile. Despite her ongoing vomiting it was documented she had '*no signs of bleeding*'. She was allocated a triage category 4 and commenced on a trial of fluid for the treatment of probable gastroenteritis.

The patient was reviewed by the ED Registrar and assessed as having no abnormal bruising, and a diagnosis of gastroenteritis was confirmed.

The patient improved with no further episodes of vomiting and tolerated fluids and was discharged home late in the evening.

The following morning, she was found to be increasingly unresponsive and the family re-presented to the ED. She had a fluctuating GCS (8-11) and was assessed as being lethargic and floppy. She became bradycardic and a CT brain was performed which showed an acute intracranial haemorrhage with midline shift.

The child required emergency neurosurgery to evacuate the haemorrhage and was transferred to the intensive care unit for ongoing management. The patient recovered and continues to receive ongoing outpatient treatment and rehabilitation.

Investigation

In this case, there was diagnostic anchoring of gastroenteritis by a number of clinicians from both Emergency Departments.

Lessons Learnt

Vomiting may be the only sign of raised intracranial pressure, particularly in the patient with a blood clotting disorder and known risk of intracranial haemorrhage. Diagnosis of gastroenteritis should be made with caution particularly in the absence of both fever and diarrhoea.

Gastroenteritis consists of the triad of vomiting, diarrhoea and fever.
In the absence of the triad, differential diagnoses should be explored for a patient who presents with vomiting alone[1].

In cases such as this, where the diagnosis does not fit the typical picture, an alternative diagnosis should be actively pursued.
Escalating care to a senior clinician for a second opinion is a safe diagnostic strategy in mitigating diagnostic error.

Clinical manifestations of raised intracranial pressure may include; vomiting, altered mental state and headache[2].

Intracranial pressure may be raised even in the absence of these signs.

Bradycardia, hypertension, decreased level of consciousness, abnormal eye movements or pupillary changes are late signs of raised intracranial pressure.

In the case of this patient, there was insufficient information gathering, including a thorough neurological assessment, which may have identified abnormal findings, leading to the request of a brain CT and ultimately a diagnosis of an intracranial haemorrhage.

During both presentations, the parents expressed their concern and raised the potential risk of an intracranial haemorrhage. These concerns were not acted upon nor considered. It is essential to listen to parents and address their concerns. When these concerns are not allayed with an explanation, it is important to escalate to a more senior clinician as per the Clinical Emergency Response System.

This case also highlights the value of having an escalation system in the ED, such as R.E.A.C.H, for patients and families to escalate care. Please visit the CEC website for more information.

References

1. New South Wales Health, 2014, Management of Acute Gastroenteritis, 4ed., viewed 10 September 2018, https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/GL2014_024.pdf
2. Tasker, R.C, 2018, Elevated intracranial pressure (ICP) in children: Clinical manifestations and diagnosis, UpToDate, viewed 17 October 2018, https://www.uptodate.com.acs.hcn.com.au/contents/elevated-intracranial-pressure-icp-in-children-clinical-manifestations-and-diagnosis?search=intrcranial%20pressure&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2

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