PAEDIATRICS

BRIEF, RESOLVED, UNEXPLAINED EVENTS

A brief, resolved, unexplained event is defined as an episode of >= 1 of:

- cyanosis or pallor
- absent, decreased, or irregular breathing
- marked change in tone (hyper- or hypotonia)
- altered level of responsiveness

The event will usually have resolved by presentation to ED and the child may appear well. It affects children under 1 year old.

Most causes are benign, but in some there is underlying serious pathology to consider as a differential diagnosis.

History

- **Colour:** cyanosis, pallor, plethora.
- **Breathing:** respiratory effort present/absent/ineffectual, gagging, choking.
- **Muscle tone:** increased, decreased, seizure-like activity.
- **Recovery:** spontaneous or resuscitation required.
- **Feeding problems:** regurgitation, vomiting, back arching following feeding.
- **Past medical history:** previous episodes, prematurity, perinatal complications.
- **Family history:** seizures, metabolic disorders, cardiac disease, sudden infant death.

Apnoea

Apnoea is defined as a cessation of respiratory airflow >20 seconds or <20 seconds if accompanied by hypoxia or bradycardia. It may be central or obstructive and it is useful to differentiate between these as the causes are different. Both may be associated with BRUEs.

- **Central apnoea:** inspiratory effort is absent due to respiratory centre dysfunction eg. due to prematurity, toxins, head trauma.
- **Obstructive apnoea:** respiratory effort is present but ineffective due to upper airway obstruction eg. airway anatomy.

Note that it is normal for respiratory rate and tidal volumes to fluctuate and be accompanied by brief pauses in breathing lasting 5-15 seconds. These may cause parental anxiety but are in fact benign as long as there are no other concerning features.

Differential Diagnosis of BRUEs

Cause	Clinical Features
Gastroesophageal reflux	Vomiting or regurgitation around event, onset during or after feeding or when supine or asleep, obstructive apnoea, nasal stuffiness, hiccupping, back arching
Respiratory tract infection	Nasal congestion, cough, fever
Heart disease/arrhythmia	Cyanotic, abnormal cardiovascular examination, family history
Seizure	Clear seizure activity, loss of muscle tone, loss of consciousness, no history of gagging or choking, family history
Sepsis/meningitis	Appears sick, fever, abnormal vital signs, altered sensorium, central apnoea, rash, bulging fontanelle
Toxins	Altered sensorium, central apnoea
Metabolic disorders	Altered sensorium, family history, hypoglycaemia, metabolic acidosis
Non-accidental injury	Occurs in presence of single caretaker, signs of NAI, required CPR, previous concerns
Breath-holding attacks	Upset prior to onset then holds breath with LOC and cyanosis

Management

The main role in ED is to identify that a brief, resolved, unexplained event has taken place and consider whether referral to the paediatric team for further evaluation is required.

Assess the infant to determine whether they are low risk. In these patients then patient education and discharge planning are the most appropriate. It may also be worthwhile providing material on performing CPR. These patients fulfil all of the following:

- Age >60 days
- Gestational age ≥32 weeks and postconceptional age ≥45 weeks
- Occurrence of only 1 BRUE (no prior BRUE ever and not occurring in clusters)
- Duration of BRUE <1 minute
- No cardiopulmonary resuscitation by trained medical provider required
- No concerning historical features
- No concerning physical examination findings