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Apparent Life-Threatening Events

You have never seen a parent more scared as one that brings in their child after an apparent life-threatening event (ALTE). This is simply defined as an **acute change in the child's breathing, behavior, or appearance that makes the parents or caretaker frightened**. The child looks as if they are dying but within seconds return to their normal selves. The issue with these patients is by the time the doctor sees them, they appear perfectly healthy. As emergency physicians, how do we work these patients up and which ones are the sick ones?

ALTE is not a specific diagnosis; rather, it describes **an episode that involves either apnea, color change, change in muscle tone, or choking/gagging**. Typically the infant is stimulated by the parent and they return to normal. The incidence has been reported as 0.5-1% of the general population. Risk factors include **prior history of apnea, pallor, feeding difficulties, cyanosis, upper respiratory infections, and age less than 10 weeks**. It has also been reported more in patients **delivered past their due date and first born children**. It is a common misconception that ALTE is a precursor to sudden infant death syndrome (SIDS); however, after looking further into the issue, most cases of children with SIDS do not have an ALTE prior.

Specific causes of ALTEs are only found in around half of cases. The cause can sometimes be determined after a detailed history, physical exam, and labs. The three main causes of ALTE include **gastroesophageal reflux (GERD), neurologic problems (i.e. seizures), and respiratory infections**. With GERD, the most likely cause of ALTE is laryngospasm. GERD can be implicated in ALTEs when there is gross emesis prior, the patient is awake and supine, or the patient is making an effort to breathe but cannot. Upper and lower respiratory tract infections are diagnosed in up to 20% of ALTE patients. ***Bordetella* and RSV** are two of the most common triggers. CNS disorders are diagnosed in up to 20% of ALTE patients. Seizure is the most common diagnosis and more common in patients with loss of muscle tone rather than choking episodes. Suspected maltreatment of a child is reported in up to 10% of ALTE patients, including suffocation, poisoning, and non-accidental head trauma.

The work-up is strictly dependent on the initial history and physical exam. The history should assess previous events, recent illness, the pregnancy and perinatal period, usual behaviors, sleeping habits, feeding habits, as well as a family and social history. The physician should also inquire about possible NAT and accidental poisonings. Inquire about GERD-like symptoms, as well as respiratory symptoms. **If the patient has experienced previous ALTEs or siblings with ALTEs, this should raise concern for abuse**. On physical exam, the provider should pay particular attention to **neurologic, respiratory, and cardiac exams**. Also, measurements of height, weight, and head circumference should occur. Continuous cardiorespiratory monitoring while in the ED is preferred. Look for signs of trauma, as well as assess the patient's developmental stage. And lastly, the upper airway should be evaluated for signs of obstruction.

If the event is deemed not to be life-threatening by the provider due to history and physical exam or if it had an obvious cause (laryngospasm from GERD), no laboratory work-up is necessary; however, usually most ALTE patients should have a basic work-up in the ED, including CBC, UA, electrolytes with BUN and creatinine, CXR, and EKG. If the patient has altered sensorium, toxicology screens should be added. If respiratory symptoms are endorsed, *Bordetella* and RSV screens should be obtained. Suspicion of child abuse warrants an extensive work-up, including

radiographs, neuroimaging, and fundoscopic exam. If seizures are thought to be the cause, the work-up is not likely to take place in the ED.

Almost all ALTE patients are admitted to the hospital for further observation and potential further work-up if indicated. In hospital observation can potentially lead to additional events being witnessed by hospital personnel. Vital signs can be continuously monitored and can direct further management or work-up of the patient. The **only reason to not admit an ALTE patient is if the episode was associated with feeding without physiologic compromise, and history and physical exam do not show any signs of concern to the physician + close follow-up is established and the parents feel comfortable going home**. All parents of ALTE patients should be instructed how to perform CPR due to risk of recurrence being 10-25%.

References / Further Reading

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