

Breath-holding spells in infants

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Abstract

Question I have children in my clinic who experience seizurelike episodes in which they cry and hold their breath to the point of cyanosis and loss of consciousness. Their examination or investigation findings are normal and referral to a pediatric specialist results in no further investigation. Are breath-holding spells common, and what type of investigation is needed?

Answer A breath-holding spell is a benign paroxysmal nonepileptic disorder occurring in healthy children 6 to 48 months of age. The episodes start with a provocation such as emotional upset or minor injury, and might progress to breath holding, cyanosis, and syncope. The episodes are extremely frightening to watch but have benign consequences. Once a clinical diagnosis is made, it is recommended to conduct an electrocardiogram and to rule out anemia, but no further investigation or referral is warranted.



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Breath-holding spells are a well described phenomenon¹ known to occur mostly among children 6 to 18 months of age. Some reports suggest that these episodes can occur even later in childhood, up to 4 years of age. Almost 5% of the pediatric population might demonstrate such episodes.²

Breath-holding spells are extremely frightening to parents. Episodes are described as infants crying, for up to a minute, and while crying excessively they will hold their breath to a point at which they might lose consciousness. On rare occasions a seizure might be witnessed immediately after the infant loses consciousness; soon thereafter, the infant will usually regain consciousness and breathe normally. Breath-holding spells are not harmful and pose no long-term risks for the infant.³

Many episodes of breath holding are associated with an inciting incident in which the infant is irritated, is being disciplined, or is angry. Examples include when infants are having their hair splashed in the bath, when they insist on holding a toy, or when they experience a minor injury.

While considered by many to be “attention seeking” behaviour, these spells are not intentional; they result from an involuntary reflex, and the child has no ability to control them. In a recent study from Turkey, children with breath-holding spells and a matched control group were subjected to a brainstem auditory evoked potentials test, and the interpeak latencies were significantly prolonged in the breath-holding spells group compared with the control group ($P=.009$ and $P=.03$, respectively,

for type III-V and type I-V interpeak latencies). This might mean that maturation delay in myelination of the brainstem could be the cause of breath-holding spells in children.⁴

There are 2 known types of breath-holding spells. The most common (85%)⁵ is a cyanotic breath-holding spell, which occurs when facial cyanosis is noticed after the child stops breathing. A pallid breath-holding spell is associated with a sudden scare to the child, and he or she becomes extremely pale during the spell.

Management

A breath-holding spell is terrifying to parents and to those experiencing it for the first time. Parents of children with recurrent episodes will anticipate future episodes and are able to react calmly. Blowing air forcefully on the face of the infant will usually terminate the episode early on, but not for all children.

When a child experiencing a breath-holding spell arrives to the clinic or the hospital, differentiating the episode from a seizure or from an apparent life-threatening event might be difficult. The clinical description by the family is important, and a detailed family history (of similar episodes), a detailed description of the spell, and the account of an initial cry with lack of postictal phase of lethargy are all factors that help the practitioner determine the diagnosis.

It is important to reassure the parents, as well as to explain the condition and its differential diagnosis. Some experts recommend an electrocardiogram for the first breath-holding spell in order to rule out a prolonged QT

syndrome, as the latter is associated with an apparent life-threatening event and sudden infant death syndrome.⁶

Breath-holding spells and anemia

Several studies, mostly from Turkey, suggest an association between breath-holding spells and anemia in young infants. Among 91 children 6 to 40 months of age who were followed prospectively for an average of 2 years, 63 (69%) were found to have iron deficiency anemia.⁷ About half (47.9%) of 165 children in another group from Turkey with breath-holding spells were found to have iron deficiency anemia,⁸ and a recent larger Turkish study confirms these findings.⁵

Two studies established the benefit of treatment with iron. In one group treated with iron (6 mg/kg daily) for 3 months, a significant reduction in cyanotic spells was recorded, compared with those not treated (84% vs 21%).⁷ In the second study, mean levels of hemoglobin and total iron-binding capacity were predictive of a substantial reduction in the frequency of spells (88% vs 6%) for iron-treated versus untreated children, respectively.⁹

Owing to the high frequency of anemia among children with breath-holding spells, testing for anemia or treating empirically for iron deficiency anemia is recommended.

Specialist referrals

It is common practice to refer children with breath-holding spells to a cardiologist (owing to the cyanotic episode) or to a neurologist (owing to the seizurelike activity); however, with no cardiologic or neurologic abnormalities found in this group of patients, most

of these referrals result in no further investigation or management.⁸

Competing interests

None declared

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