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An Algorithm Approach to Pediatric Diagnosis

Breath-holding Spells

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Srikiran Aroor

Introduction

- Breath-holding spells are paroxysmal self-limiting events.
- They are a result of provocation (pain, anger, or frustration).
- They result in crying followed by apnea during the expiration phase of crying.
- It could be followed by occurrence of either cyanosis (cyanotic type) or pallor (pallid type).
- There may be a loss of consciousness and altered body tone for a brief period usually lasting for 1 minute during or after the spell.
- They are seen in up to 10% of healthy babies between the age group of 6 months and 6 years, though the typical age of onset is between 6 months and 18 months.
- It is also termed infantile syncope.
- The cyanotic type is more common and follows anger or frustration.
- The pallid type is rarer and usually results from sudden fright or pain.
- A mixed type may also occur.

Etiology

- The etiology of breath-holding spells is not definite. Recent research suggests genetically mediated dysregulation of autonomic nervous system reflex is responsible for the spells.
- Pallid type is supposedly secondary to cardiac asystole similar to vasovagal attack.
- Cyanotic type results from a rise in intrathoracic pressure leading to impaired cerebral circulation.
- Anemia due to the compensatory mechanism of the autonomic system results in cerebral hypoxia.

Red Flag Signs

- Absence of provoking factors like anger
- Presence of prolonged altered sensorium
- Late onset of cyanosis
- Presence of baseline cyanosis
- Prolonged duration of cyanosis
- Presence of clubbing
- Prolonged tonic–clonic movements

Approach

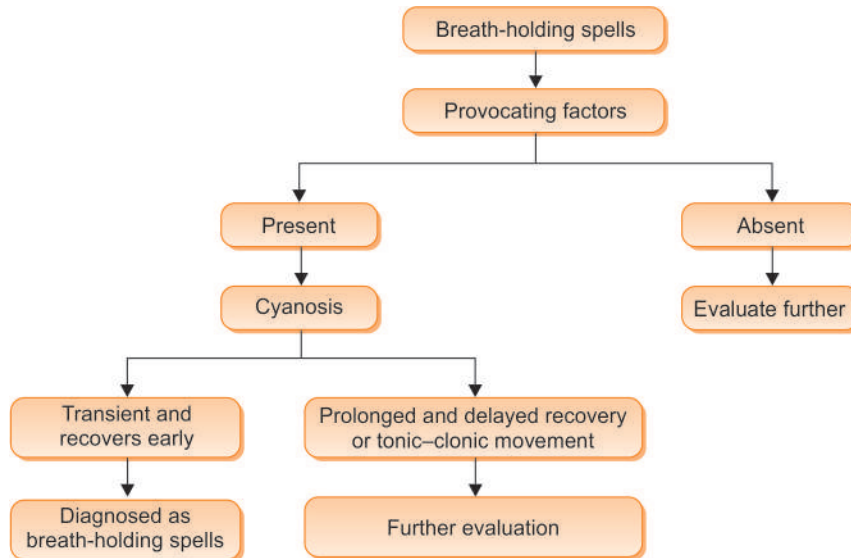
- History related to age group
- History of provoking factors
- Previous history of seizures
- Details of cyanosis
- Occurrence of tonic–clonic movements
- Examination for clubbing in the hands
- Baseline pallor/cyanosis
- Neurodeficits
- Cardiac examination

Algorithm

- *Diagnosis*: Detailed clinical description is sufficient to make a diagnosis most of the time. Workup for iron deficiency must be done.
- An electroencephalogram (EEG) is indicated only if the manifestations are not classical.

- The algorithmic approach to the management of breath-holding spells is given in **Flowchart 1**.

FLOWCHART 1: Approach to breath-holding spells.



Suggested Reading

- Gupta P (Ed). UG Textbook of Pediatrics. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2023. pp. 84-5.
- Gupte S (Ed). The Short Textbook of Pediatrics, 13th edition. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2020. p. 107.
- Gupta P, Menon PSN, Ramji S, Lodha R (Eds). PG Textbook of Pediatrics, 3rd edition. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2022. pp. 766-7.