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Research Article

Frequency of Iron Deficiency Anemia in Children with Breath Holding Spells

[1]Shehran Bilal, [2]Muhammad Shoaib Khan and [3]Sadaf Zahra
[1]DHQ Hospital, Hafizabad, shhranbilal@gmail.com
[2]DHQ Jhang

ABSTRACT
Objectives:determine the frequency of iron deficiency anemia in children with breath holding spells.
Methodology: A total of 95 caseswho fulfilled the inclusion criteria included in the study. After explaining the purpose and benefits of the study, informed written consent was taken from parents or guardians of children. Exclusion criteria were strictly followed. Patients included in the study were thoroughly evaluated by taking detailed history and examination. 3cc blood was drawn for complete blood count and serum ferritin level and sent to the hospital laboratory. Iron deficiency anemia was assessed.
Results: In this study, out of 95 cases, 61.05%(n=58) were between 6-36 months of age whereas 38.95%(n=37) were between 37-60 months of age, mean+sd was calculated as 38.74+11.98 months, 58.95%(n=56) were male and 41.05%(n=39) were females, frequency of iron deficiency anemia in children with breath holding spells was recorded as 51.58%(n=49) whereas this morbidity was absent in 48.42%(n=46).
Conclusion: The frequency of iron deficiency anemia is higher in children with breath holding spells. However, the treatment of these children with easily available and cheap iron supplements is effective which may reduce the anxiety of the parents consequently it will also decrease the number of unnecessary investigations and less no of visits to the hospital.

Key words: Children, Breath hold spells, iron deficiency anemia

INTRODUCTION
Breath holding spells are age specific expressions of frustration and anger.[1] These attacks are very frightening for the parents or care givers.[2] They are triggered by mild trauma or emotional upset.[3] During the spell child cries excessively and at the end he becomes apenic for several seconds and either becomes blue or pale or both, even he can go into tonic or clonicmovements.[4] The more common cyanotic form is considered to be due to inhibition of respiratory effort due to autonomic instability, or intra-pulmonary shunting. Pallid spells are caused by an exaggerated vagal response to noxious stimuli leading to bradycardia or a brief asystole.[5] Although breath holding spells are mostly self-limited and spontaneous resolution occur without sequelae, the may be an initial symptom of prolonged QT syndrome and paroxysmal cardiac rhythm abnormalities.[6]
One other rare complication is prolonged syncope or even status epilepticus.[7]
The pathophysiology of breath holding spells is multifactorial. Among various causes iron deficiency anemia is the most important one.[3] It causes spells by decreasing oxygenation of brain.[6] A delay in brain stem myelation measured through brain stem evoked potentionals is also a contributing factor.8 Other risk factor include zinc deficiency, positive family history, birth sequence, parents education status and father's age.[9]
According to WHO statistics 43% children worldwide and 29% in Pakistan are iron deficient. Iron deficiency is the commonest one among three

micronutrient deficiencies (Iron, Vit-A and iodine) in the developing world.10 So Treatment with iron is recommended in children with iron deficiency anemia and a trial can be considered even without its presence.[11] Besides iron, refractory cases of breath holding spells have been treated successfully with piracetam, and cardiac pacemaker implantation[7,12]

Studies from all over the world showed that breath holding spells are frequently associated with iron deficiency anemia.[1,3,13] One such study conducted in Rawalpindi showed association of breath holding spells with iron deficiency anemia as 56.67%.[14] And treatment with iron supplements greatly reduced its frequency.[13]

There is no study conducted so far in our local hospital, as per my knowledge, so rationale of my study is to find frequency of iron deficiency anemia in children with breath holding spells who present to our local hospital and treat these children with easily available and cheap iron supplements so that parents anxiety could be reduced and there will be decreased number of unnecessary investigations and less no of visits to the hospital.

METHODOLOGY

A total of 95 cases who fulfilled the inclusion criteria included in the study. After explaining the purpose and benefits of the study, informed written consent was taken from parents or guardians of children. Exclusion criteria were strictly followed. Patients included in the study were thoroughly evaluated by taking detailed history and examination. 3cc blood was drawn for complete blood count and serum ferritin level and sent to the hospital laboratory. Iron deficiency anemia was assessed.

RESULTS

Age distribution of the patients was done, it shows that 61.05%(n=58) were between 6-36 months of age whereas 38.95%(n=37) were between 37-60 months of age, mean±sd was calculated as 38.74±11.98 months. Gender distribution of the patients was done, it shows that 58.95%(n=56) were male and 41.05%(n=39) were females.Mean Hb level was recorded as 9.74+4.21(g/dl). Mean ferrittin level was recorded as 10.47+5.87(mg/l).

Frequency of iron deficiency anemia in children with breath holding spells was recorded as 51.58%(n=49) whereas this morbidity was absent in 48.42%(n=46). (Table No. 1)

Table 1: Frequency of Iron Deficiency Anemia in Children with Breath Holding Spells (n=95)

Iron deficiency anemia	No. of patients	%
Yes	49	51.58
No	46	48.42
Total	**95**	**100**

DISCUSSION

This study was conducted to find the frequency of iron deficiency anemia in children with breath holding spells who presented to our local hospital and treat these children with easily available and cheap iron supplements so that parents anxiety may be reduced and there will be decreased number of unnecessary investigations and less no of visits to the hospital.

In this study, out of 95 cases, 61.05%(n=58) were between 6-36 months of age whereas 38.95%(n=37) were between 37-60 months of age, mean+sd was calculated as 38.74+11.98 months, 58.95%(n=56) were male and 41.05%(n=39) were females, frequency of iron deficiency anemia in children with breath holding spells was recorded as 51.58%(n=49) whereas this morbidity was absent in 48.42%(n=46).

Studies from all over the world showed that breath holding spells are frequently associated with iron deficiency anemia.[1,3,13] One such study conducted in Rawalpindi showed association of breath holding spells with iron deficiency anemia as 56.67%.[14] And treatment with iron supplements greatly reduced its frequency.[13] The findings of our study correspond to the study conducted at Rawalpindi.

Handan Gençgönül and othesrs[15] evaluated iron and zinc levels in breath-holding spells and recorded that anemia was observed in 28 children (56%), 22 children (44%) didn't have an anemia.Another recent study[16] performed a

clinical and laboratory analysis through reviewing the data of 64 child having breath holding spells considering the types of BHS and its relation to iron deficiency anemia, with special consideration to neurodevelopmental status and EEG finding and recorded that 62.5% of children with BHS has anemia, the frequency of BHS has improved markedly with 12 weeks of elemental iron therapy.

Rahul Jan and others[17]analysed the effect of iron supplementation in children with breath holding spells, irrespective of their iron status and study the factors associated with the response and concluded that iron supplementation is effective in the management of breath holding spells. Non-anaemic and iron-replete children with breath holding spells also respond well to iron supplementation.

However, the findings of our study reveal that iron deficiency anemia is commonly found in children presenting with breath holding spells, and the treatment of these children with easily available and cheap iron supplements is effective which may reduce the anxiety of the parents consequently it will decrease the number of unnecessary investigations and less no of visits to the hospital.

CONCLUSION

The frequency of iron deficiency anemia is higher in children with breath holding spells. However, the treatment of these children with easily available and cheap iron supplements is effective which may reduce the anxiety of the parents consequently it will also decrease the number of unnecessary investigations and less no of visits to the hospital.

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