Evaluation of Neurodevelopmental Status of Patients Followed with Breath-Holding Spells - Single Center Experience

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INTRODUCTION

Breath-holding spells (BHSs) are brief episodes of involuntary cessation of breathing that occur in childhood. These episodes can be seen in response to stimuli such as injury, fear, anger or frustration. [1]

Although they are nonepileptic events, they may sometimes resemble a seizure and can cause distress among families. [2]

OBJECTIVES

We aimed to evaluate the laboratory, electroencephalography findings and Denver Developmental Screening Test-II (DGTT-II) results of patients with breath-holding spells in comparision with healthy controls.

MATERIALS & METHODS

The data of the patients who were followed up between 2015 and 2022 at Mersin University Child Neurology outpatient clinic with BHSs who underwent DGTT-II and the DGTT-II results of healthy children were examined retrospectively.

RESULTS

This study was conducted on 102 patients diagnosed with BHSs based on history and clinical findings. Forty four were female and 58 were male. Of 66 healthy controls 30 were female and 36 were male. In the DGTT-II test, abnormal and risky results were observed more frequently in the BHS group than in the control group($p<0.05$)(Table 1). In the DGTT II test, it was determined that the scores of fine motor, gross motor and language areas were lower in BHS group than the control($p<0.05$)(Table 2). Vitamin B12 deficiency was present in 41,7% and 38,6% of the patients had iron deficiency findings. Electroencephalography was seen in 70% of the patients and 63.3% were normal.

When the patient group was evaluated within itself, no significant difference was detected in the DGTT-II test results in terms of anemia, iron and vitamin B12 deficiency.

Table 1		Groups				Total		
		BHSs		Control				
DGTT results	Normal	48	47,1	66	100,0*	114	67,9	
	Risky	43	42,2*	0	0,0	43	25,6	<0,001
	Abnormal	11	10,8*	0	0,0	11	6,5	
Personal Social	Normal	99	97,1	66	100,0	165	98,2	
	Risky	3	2,9	0	0,0	3	1,8	0,280
Fine Motor	Normal	89	87,3	66	100,0*	155	92,3	
	Risky	13	12,7*	0	0,0	13	7,7	0,002
Language	Normal	85	83,3	66	100,0*	151	89,9	
	Risky	14	13,7*	0	0,0	14	8,3	0,002
	Abnormal	3	2,9	0	0,0	3	1,8	
Gross Motor	Normal	76	74,5	66	100,0*	142	84,5	
	Risky	25	24,5*	0	0,0	25	14,9	<0,001
	Abnormal	1	1,0	0	0,0	1	0,6	

Table 2	BHSs			Control			
	Mean±SD	Median [IQR]	Min-Max	Mean±SD	Median [IQR]	Min-Max	p
Personal Social	89,47±1,71	90 [90-90]	79,61-90	89,82±0,85	90 [90-90]	85,9-90	0,141
Fine Motor	88,38±2,77	90 [87,18-90]	80,52-90	89,84±0,68	90 [90-90]	86-90	<0,001
Language	87,5±5,41	90 [87,58-90]	56,25-90	89,51±2,1	90 [90-90]	75-90	<0,001
Gross motor	86,52±6,45	88,08 [85,5-90]	45-90	89,48±1,45	90 [90-90]	81-90	<0,001

CONCLUSIONS

While BHS is considered generally have a good prognosis and is self-limiting, Olsen et al. showed that one third of the patients had fainting and concentration problems afterwards.[3] Ozcora et al. evaluated brainstem in children with BHS via neuroimaging. Although their DGTT-II test results were normal they concluded that BHS should be addressed as in other neurodevelopmental diseases because of differences in brain structures compared to healthy controls.[4]

In our study, we wanted to emphasize that neurodevelopmental status of children with BHS should be monitored closely. DGTT-II can be considered as an useful instrument to detect delays thay may be associated with BHSs.

REFERENCES

1.Carman KB, Ekici A, Yimenicioglu S, Arslantas D, Yakut A. Breath holding spells: point prevalence and associated factors among Turkish children. *Pediatr Int*. 2013;55(3):328–331.

2.Leung AKC, Leung AAM, Wong AHC, Hon KL. Breath-holding spells in pediatrics: a narrative review of the current evidence. Curr Pediatr Rev 2019;15:22–9.

3.Olsen AL, Mathiasen R, Rasmussen NH, Knudsen FU. Long-term prognosis for children with breath-holding spells. Dan Med Bull 2010;57:A4217.

4.Ozcora GDK, Kumandas S, Sagiroglu A, Acer N, Doganay S, Yigit H, Canpolat M, Per H, Gumus H. Evaluating the brainstem in children with breath-holding spells. North Clin Istanb. 2022 Nov 28;9(6):610-615.

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