Received: September 7, 2023
Accepted: December 12, 2023

Acad Med J 2023;3(3):79-81
UDC: 616-056.7-053.31
DOI: https://www.doi.org/10.53582/AMJ2333079m
Case report

UNUSUAL PRESENTATION OF BECKWITH-WIEDEMANN SYNDROME IN AN INFANT

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Abstract

Beckwith-Wiedemann syndrome affects 1 in approximately 14000 newborns. Here we present an atypical case of an infant with Beckwith-Wiedemann syndrome with mild facial dysmorphia, macroglossia, hypotonia, respiratory and feeding difficulties, without lateralized overgrowth, without abdominal wall defects, no organomegaly, hypoglycemia or embryonal tumors.

Keywords: Beckwith -Wiedemann syndrome, overgrowth syndrome, macroglossia, facial dysmorphia, hypoglycaemia in a newborn, embryonal tumors, visceromegaly, polyhydramnios.

Introduction

Beckwith-Wiedemann syndrome affects 1 in approximately 14,000 newborns[1]. The condition was named after the American pediatric pathologist John Bruce Beckwith in 1963, and the German pediatrician Hans-Rudolf Wiedemann in 1964, who reported the syndrome independently. The disorder also known as overgrowth syndrome can have multiple features leading to the newly defined Beckwith-Wiedemann spectrum (BWSp), but the characteristic findings are macroglossia, macrosomia, and abdominal wall defects[2]. Affected newborns are large for gestational age, with proportional length and weight, with a risk of severe hypoglycemia in the newborn period and early infancy[3-5]. These children can have hemihypertrophy due to asymmetric growth, visceromegaly, as well as a greater risk of embryonal tumors[3].

Keywords: Beckwith-Wiedemann syndrome, Beckwith-Wiedemann spectrum (BWSp), overgrowth syndrome, macroglossia, facial dysmorphia, hypoglycemia in a newborn, embryonal tumors, visceromegaly, polyhydramnios

Case report

Here we present an atypical case of an infant with mild facial dysmorphia, macroglossia, hypotonia, respiratory and feeding difficulties, without lateralized overgrowth, without abdominal wall defects, no organomegaly, hypoglycemia or embryonal tumors. A twenty-eight-day-old newborn was admitted to the Neonatal Department because of respiratory difficulties and cyanosis. The child was born prematurely in 33+3 gestational age, as appropriate for gestational age, there was significant polyhydramnios as a risk factor, with

a birth weight of 2150 g; height 44 cm; APGAR 6/7. The baby had frequent apneas, with cyanosis, with the need for treatment on mechanical ventilation, with negative laboratory findings for inflammation, normal blood glucose, and normal auscultatory lung finding. After initial stabilization of the vital signs, prolonged need for oxygen treatment was noted, with abundant secretion in the respiratory tract and feeding difficulties. Examination performed by a pediatric neurologist - ECHO of the CNS and EEG during sleep were with no significant findings. Feeding was performed via NG tube with a well-tolerated adapted milk formula (Fig.1). Repeated attempts were made for feeding with a bottle, but with a poor coordination of the act of sucking and swallowing, and feeding with a tube continued until the fifth month. Currently the child (7-month-old) is fed with a bottle and foods without any episodes of choking (Fig.2).

In the further course, a stable general condition was observed, with gradual reduction of macroglossia and improvement of muscle tonus, with an increase in body weight (6500 g).

Due to the noted craniofacial dysmorphia with coarse facial appearance, macroglossia, micrognathia, hypertelorism, saddle nose, protruding eyeballs, posteriorly placed earlobes and short neck, further genetic analyses were performed. Methylation-specific multiplex ligation-dependent probe amplification (MS-MLPA) showed loss of methylation on IC2 (imprinting center 2) on 11p15 chromosome. Loss of methylation is present in nearly 70-80% of patients' blood sample and buccal mucosal swab. This genetic finding confirmed the diagnosis of Beckwith-Wiedemann syndrome.

Genetic analysis of the parents showed no changes in the IC1 and IC2 regions. Material obtained for karyotyping resulted in a normal 46 XY male type.

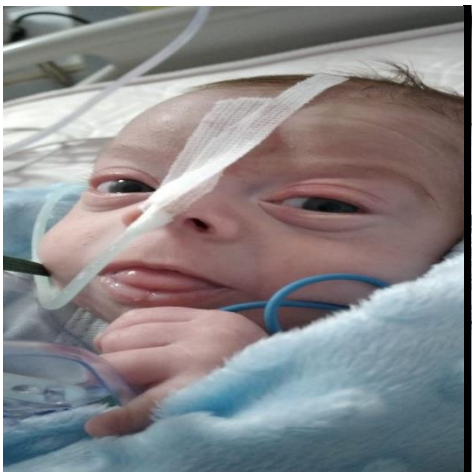

Fig.1

Fig.2

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Discussion

In this case, macroglossia was the only characteristic sign of the Beckwith-Wiedemann spectrum, giving a picture of an atypical-unusual clinical presentation of the Beckwith-Wiedemann syndrome. Macroglossia and hypotonia were the cause of breathing and feeding difficulties until the fifth month of life when there was a moderate reduction of macroglossia and improvement of muscle tonus. Macroglossia associated with Beckwith-Wiedemann syndrome is seen in 99% of cases. Not all patients presenting with macroglossia require tongue reduction as mild macroglossia may improve. Respiratory problems, feeding difficulties, problems with speech and articulation, and orthodontic problems are the reasons for undergoing a tongue reduction surgery in about 40% of children[6-7].

Conclusion

Beckwith-Wiedemann syndrome should be suspected in all babies with macroglossia and obstructive airway symptoms, which is more commonly present in the later infancy, leading to respiratory distress, apnea and hypoxia, as in our child. The large tongue also contributed to feeding difficulties, which can be overcome with growth.

Children with Beckwith-Wiedemann syndrome usually do well, with usually normal life expectancy, they grow according to their parents' height. Children with Beckwith-Wiedemann syndrome are at an increased risk of childhood cancer, hence they should be closely monitored for cancer onset. An abdominal ultrasound every 3 months until at least eight years of age is recommended and a blood test to measure alpha-fetoprotein (AFP) every 12 weeks until at least four years of age. The decision is to be made by families and physicians.

Conflict of interest statement. None declared.

References:

1. Barisic I, Boban L, Akhmedzhanova D, Bergman JEH, Cavero-Carbonell C, Grinfelde I, *et al*. Beckwith Wiedemann syndrome: A population-based study on prevalence, prenatal diagnosis, associated anomalies and survival in Europe. *Eur J Med Genet*. 2018; 61(9): 499-507. doi: 10.1016/j.ejmg.2018.05.014.
2. Duffy KA, Cielo CM, Cohen JL, Gonzalez-Gandolfi CX, Griff JR, Hathaway ER, *et al*. Characterization of the Beckwith-Wiedemann spectrum: Diagnosis and management. *Am J Med Genet C Semin Med Genet* 2019; 181(4): 693-708. doi: 10.1002/ajmg.c.31740.
3. Zivot A, Edelman M, Glick R, Hong A, Fish JD. Congenital Hepatoblastoma and Beckwith-Wiedemann Syndrome. *J Pediatr Hematol Oncol* 2019; 42(8): e798-e800. doi: 10.1097/MPH.0000000000001565.
4. DeBaun MR, King AA, White N. Hypoglycemia in Beckwith-Wiedemann syndrome. *Semin Perinatol* 2000; 24(2): 164-171. doi: 10.1053/sp.2000.6366.
5. Munns CFJ, Batch JA. Hyperinsulinism and Beckwith-Wiedemann syndrome. *Arch Dis Child Fetal Neonatal Ed* 2001; 84(1): F67-F69. doi: 10.1136/fn.84.1.f67.
6. Elliot M, Maher ER. Beckwith–Wiedemann syndrome. *J Med Genet* 1994; 31(7): 560-564. doi: 10.1136/jmg.31.7.560.
7. Wang KH, Kupa J, Duffy KA, Kalish JM. Diagnosis and Management of Beckwith-Wiedemann Syndrome. *Front Pediatr*. 2020 21;7:562. doi: 10.3389/fped.2019.00562. PMID: 32039119; PMCID: PMC6990127.