Epileptic spasms in a child with infantile tremor syndrome: A rare case report and review of literature

Prateek Kumar Panda[1], Kalpana Panda[2]

From Senior Resident, Department of Pediatrics, [1]All India Institute of Medical Sciences, [2]RML Hospital, New Delhi, India

Correspondence to: Prateek Kumar Panda, Department of Pediatrics, All India Institute of Medical Sciences, New Delhi, India. E-mail: drprateekpanda@gmail.com

Received - 19 October 2018 Initial Review - 03 December 2018 Accepted - 20 December 2018

ABSTRACT

Infantile tremor syndrome (ITS) is usually present in purely breastfed babies of vegetarian mothers with acute regression of developmental milestones, pallor with megaloblastic anemia, bleating goat like cry, knuckle, and other body site hyperpigmentation, apathy, listlessness, and brown scanty hair. This is usually due to Vitamin B12 deficiency and symptoms can be reversed with Vitamin B12 supplementation. There are only a few anecdotal case reports of seizure in children with ITS. Hereby, we are presenting a case of a child having epileptic spasms associated with ITS along with megaloblastic anemia with hypersegmented neutrophils in peripheral smear and high mean corpuscular volume. The child was successfully treated with Vitamin B12 supplementation and oral corticosteroids. This case report underscores the importance of considering the possibility of Vitamin B12 deficiency in any child presenting with megaloblastic anemia with either generalized tremulousness with or without seizures.

Key words: *Epileptic spasms, Infantile tremor syndrome, Megaloblastic anemia, Vitamin B12 deficiency*

Infantile tremor syndrome (ITS) is still prevalent in low- and middle-income countries. It is, especially, common in babies born to purely vegetarian mothers [1]. The symptoms usually start between 6 months and 12 months of age. Initially, the child develops listlessness, excessive irritability, loss of acquired motor and cognitive milestones, brown scanty hair, knuckle hyperpigmentation, and a characteristic bleating goat-like cry [2]. This early stage is called pre-ITS [3]. Later on, the child also develops tremulousness involving trunk and extremities and develops frank ITS, if pre-ITS remains untreated [4].

Many times, these children also have associated clinical features due to other macro and micronutrient deficiency [3]. The pathogenesis of ITS is currently considered to be due to Vitamin B12 deficiency, as almost all of these children have low serum Vitamin B12 levels and most of these children have megaloblastic anemia or dimorphic anemia on peripheral smear. Bone marrow examination in these children also reveals a megaloblastic bone marrow. Moreover, injectable and oral Vitamin B12 supplementation in these children leads to resolution of symptoms [2].

Although the tremulousness associated with this disorder is often misdiagnosed as seizures by health-care practitioners, the incidence of true seizures in ITS is extremely rare and only few anecdotal case reports of seizure in children with ITS are available in the published literature [5]. Hereby, we are documenting one similar case of an 8-month-old boy admitted with ITS and epileptic spasms having megaloblastic anemia due to nutritional Vitamin B12 deficiency.

CASE REPORT

An 8-month-old male infant was brought to the outpatient department by parents with chief complaints of loss of acquired milestones for 2 months, hyperpigmentation of knuckles, and perioral region. He was suffering from generalized body tremulousness and epileptic spasms in cluster (a series of sudden flexion of the head, trunk, arms, and legs) occurring at sleep-wake transition from 6 months of age. On clinical examination, the child had brown scanty hypopigmented hair, pallor, knuckle hyperpigmentation, no hepatosplenomegaly, pallor, weak high-pitched cry, and generalized tremulousness.

Hematological parameters revealed megaloblastic anemia with hemoglobin of 6.5 g/dL, mean corpuscular volume of 103 uL, total leukocyte count of 4500/uL, and total platelet count of 134,000/uL. Peripheral smear showed megaloblasts and hypersegmented neutrophils. Serum Vitamin B12 level was low (12 ng/L) as the mother was a pure vegetarian with low serum Vitamin B12 levels (35 ng/L). The infant had also faulty feeding practices as he was exclusively breastfed until 8 months of age and no weaning foods were introduced at 6 months of age. Electroencephalogram (EEG) showed modified hypsarrhythmia.

Magnetic resonance imaging brain showed mild cerebral atrophy. Metabolic causes of functional Vitamin B12 deficiency such as methylmalonic acidemia were ruled out by urine gas chromatography-mass spectroscopy and blood tandem mass spectroscopy, which were normal. A clinical diagnosis of megaloblastic anemia with ITS with epileptic spasms due to

nutritional Vitamin B12 deficiency was made. Subsequently, the child was started on injection hydroxocobalamin 1000 mg intramuscular daily for 1 month followed by 4 weeks and, afterward, oral Vitamin B12 supplementation, until serum Vitamin B12 levels were normal [5]. The child also received oral folic acid supplementation.

For associated epileptic spasms, the child was started on oral prednisolone, and within 2 weeks, the child was free from seizures; the repeated EEG after 4 weeks of oral steroid therapy showed resolution of hypsarrhythmia. All symptoms of ITS also showed clinical resolution over the next 3 months, and the child started gaining developmental milestones. Repeat hematological parameters showed resolution of anemia with no features of Vitamin B12 deficiency in peripheral smear. Currently, at 1 year follow-up, the child has only minimal developmental delay (development quotient of 68), seizure free with no pallor, and no other features of ITS.

DISCUSSION

The studied case describes a rare clinical scenario of the presence of megaloblastic anemia, ITS, and epileptic spasm in a single child. Only a few cases of West syndrome with epileptic spasms caused by Vitamin B12 deficiency have been reported in literature [5]. However, none of these children had clinical features of ITS. Arican *et al*. had described an infant presenting with cryptogenic West syndrome due to Vitamin B12 deficiency [6]. Erol *et al*. described a 10-month-old female infant, who was presented with infantile spasms secondary to Vitamin B12 deficiency. Her neurological examination revealed apathy and profound hypotonia with brisk deep tendon reflexes [7]. With the initiation of adrenocorticotropic hormone (ACTH) treatment, her spasms improved, and after addition of parenteral Vitamin B12 treatment, the patient became more awake and reactive to stimuli. Repeat EEG was normal [6].

Malbora *et al*. reported two cases of infantile spasms associated with Vitamin B12 deficiency [8]. Both of them have their symptoms started at the age of 6 months, and neurological examination of both the infants revealed apathy and hypotonia with brisk deep tendon reflexes. Both the cases responded favorably to intramuscular cyanocobalamin, phenobarbitone, and injection ACTH [8].

Glaser *et al*. reported a 6-month-old girl who had been referred due to progressive apathy [9]. The girl was comatose, pale, and tachycardic at presentation with generalized muscular hypotonia and lack of tendon reflexes. Vitamin B12 was initiated days after admission, starting with intramuscular injections for 10 days (1 mg/day) [9]. To the best of our knowledge, this is the only child described in literature until now, in whom, megaloblastic anemia and epileptic spasms occurred due to Vitamin B12 deficiency in the same child [8]. On the other hand, methylmalonic acidemia is known to cause megaloblastic anemia, epileptic spasm, developmental delay, and intermittent metabolic decompensation due to functional Vitamin B12 deficiency and affection of central nervous system, which was ruled out in our case.

CONCLUSION

In case of any infant presenting with pallor and acute regression of milestone with or without tremulousness, ITS should be considered and simple peripheral smear examination can lead to clinical diagnosis in these cases. Especially, the presence of a pure vegetarian mother and faulty feeding practice is usually obtained in clinical history. These children show significant improvement in clinical symptoms with Vitamin B12 supplementation. Rarely, Vitamin B12 deficiency can cause epileptic spasms, which is completely treatable with Vitamin B12 supplementation and ACTH/steroid treatment.

REFERENCES

1. Holla RG, Prasad AN. Infantile tremor syndrome. Med J Armed Forces India 2010;66:186-7.
2. Gautam P, Sharma N, Chaudhary S, Kaushal A. Infantile tremor syndrome in modern times. J Pediatr Neurosci 2017;12:232-6.
3. Gupta R, Mandliya J, Sonker P, Patil V, Agrawal M, Pathak A, *et al.* Infantile tremor syndrome: Role of Vitamin B12 revisited. J Pediatr Neurosci 2016;11:305-8.
4. Goraya JS, Kaur S. Infantile tremor syndrome: A review and critical appraisal of its etiology. J Pediatr Neurosci 2016;11:298-304.
5. Gupta V. Vitamin B complex Deficiency. In: Gupta P, Lodha R, Menon PS, editors. PG Textbook of Pediatrics. 2nd ed. New Delhi: Jaypee Medical Publications; 2017. p. 853-57
6. Arican P, Dundar N, Cavusoglu D. An occult cause of infantile spasms: Vitamin B12 deficiency. A case report and review of literature. Neurol Asia 2016;21:275-8.
7. Erol I, Alehan F, Gümüs A. West syndrome in an infant with Vitamin B12 deficiency in the absence of macrocytic anaemia. Dev Med Child Neurol 2007;49:774-6.
8. Malbora B, Yuksel D, Aksoy A, Ozkan M. Two infants with infantile spasms associated with Vitamin B12 deficiency. Pediatr Neurol 2014;51:144-6.
9. Glaser K, Girschick HJ, Schropp C, Speer CP. Psychomotor development following early treatment of severe infantile Vitamin B12 deficiency and West syndrome–Is everything fine? A case report and review of literature. Brain Dev 2015;37:347-51.

Funding: None; Conflict of Interest: None Stated.

How to cite this article: Panda PK, Panda K. Epileptic spasms in a child with infantile tremor syndrome: A rare case report and review of literature. Indian J Child Health. 2019; 6(1):49-50.

Doi: 10.32677/IJCH.2019.v06.i01.012