

DOI: 10.21767/1989-5216.1000188

## Writing Tremor as a Manifestation of Vitamin B12 Deficiency

**Guijarro-Castro C\*** and Estallo-Guijarro L

Hospital Virgen de la Luz (Cuenca), Caracas and San Bernardo Medical Center (Madrid), Spain

**\*Corresponding author:** Guijarro-Castro C, Hospital Virgen de la Luz (Cuenca), Caracas and San Bernardo Medical Center (Madrid), Spain, Tel: 34969179900; E-mail: cristina.guijarro@sen.es**Received date:** January 12, 2017; **Accepted date:** January 24, 2017; **Published date:** January 31, 2017**Citation:** Guijarro-Castro C and Estallo-Guijarro L. Writing Tremor as a Manifestation of Vitamin B12 Deficiency. Arch Med. 2017, 9:1**Copyright:** © 2017 Guijarro-Castro C, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Letter to Editor

Postural and kinetic tremor due to vitamin B12 deficit is rare in adults, but secondary writing tremor due this deficit is more unusual. We report the case of a writing tremor patient that was resolved after cyanocobalamin treatment. An 80-year-old man presented with a three-month history of trembling on his right hand, only becoming apparent when writing. He suffered from hypertension and diabetes, had no familial history recorded, and did not take dopaminergic-block drugs. Neurologic examination showed a fine, rapid tremor of the hands that began immediately after the patient began to write. Results of the rest of the examination were normal. Results of laboratory tests were normal, except for a serum vitamin B12 level of 132 ng per liter (normal range, 222 ng/l to 753 ng/l). A Schilling test demonstrated malabsorption of vitamin B12. A magnetic resonance image of the brain was normal. Surface electromyogram showed a 7 Hz synchronous tremor of the flexor and extensor muscles of the forearm that began when the patient was writing and was absent in other actions. Electrophysiological studies also showed mild sensory axonal polyneuropathy. Clonazepam (1 mg per day) and cyanocobalamin (injections of 1000 µg given daily for two weeks, then weekly for two months, and once a month thereafter) provided complete relief of the tremor. Follow-up after one year showed no abnormalities. Then, treatment with clonazepam was discontinued, without recurrence of the tremor. Task-specific tremor is a form of action tremor that occurs when a person is performing a specific task [1]. The most frequent form of task-specific tremor is writing tremor (WT). The pathophysiology of WT is not clear and could be a variant of essential tremor or a type of focal dystonia or an independent entity [2]. However, the results in cortical inhibition during task-specific contractions indicate that WT is not a variant of focal task-specific dystonia, but rather an independent entity [3]. WT typically occurs at a frequency of 5 Hz to 7 Hz. The writing tremor may progress to another task specific tremor of specific action, or rest tremor, but not to postural tremor. Tremor temporary suppression by alcohol is observed in about one-third of the cases, and beneficial responses to propranolol, primidone, anticholinergics, botulinum toxin treatment, and stereotactic surgery has been reported [2].

Although the association of tremor in adults with vitamin B12 deficiency is very rare [4,5], the patient's tremor disappeared after vitamin B12 supplements, which supports this association. Hyperactivity in the cerebellar hemispheres have been demonstrated with positron emission tomography in PWT, and it is known that these structures may be affected by vitamin B12 deficiency [6]. There is only one case of postural and kinetic tremor due to vitamin B12 deficit reported in the last 13 years [4] and, like in our patient, it was quickly resolved after correction of this deficit. The tremor is a characteristic symptom of vitamin B12 deficiency in children, but not known in adults [7,8]. The vitamin B12 deficiency should be added to the list of diseases that can cause writing tremor. The deficiency correction completely solves the tremor.

### References

1. Bain PG, Findley LJ, Britton TC, Rothwell JC, Gresty MA, et al. (1995) Primary writing tremor. *Brain* 118: 1461-72.
2. Pita Lobo P, Quattrocchi G, Jutras MF, Sangla S, Apartis E, et al. (2013) Primary writing tremor and writer's cramp: two faces of a same coin? *Mov Disord* 28: 1306-1307.
3. Ljubisavljevic M, Kacar A, Milanovic S, Svetel M, Kostic VS (2006) Changes in cortical inhibition during task-specific contractions in primary writing tremor patients. *Mov Disord* 21: 855-859.
4. Koussa S, Taher A, Sayegh R (2003) Postural and kinetic tremor associated with vitamin B12 deficiency. *Rev Neurol* 159: 1173-1174.
5. Benito-León J, Porta-Etessam J (2000) Shaky-leg syndrome and vitamin B12 deficiency. *N Engl J Med* 342: 981.
6. Katsaros VK, Glocker FX, Hemmer B, Schumacher M (1998) MRI of spinal cord and brain lesions in subacute combined degeneration. *Neuroradiology* 40: 716-719.
7. Demir N, Koc A, Üstüyl L, Peker E, Abuhandan M (2013) Clinical and neurological findings of severe vitamin B12 deficiency in infancy and importance of early diagnosis and treatment. *J Paediatr Child Health* 49: 820-824.
8. Uddin MK, Rodnitzky RL (2003) Tremor in children. *Semin Pediatr Neurol* 10: 26-34.