

# Immediate Recovery of an “Ischemic Stroke” Following Treatment with Intravenous Thiamine (vitamin B1)

Arnon Blum MD, Michal Ovadia BSc, Gil Rosen MD and Claudia Simsolo MD

Department of Medicine, Poriah Medical Center, Tiberias, affiliated with Bar-Ilan University Faculty of Medicine in the Galilee, Safed, Israel

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**B**ariatric surgery for weight loss has proven to be a highly efficient solution for morbid obesity, type 2 diabetes mellitus and other related comorbidities. However, the rapid weight loss after the surgery may lead to side effects, namely, vomiting, and vitamin deficiency. Low levels of B complex vitamins may cause neurologic complications such as Wernicke-Korsakoff syndrome and peripheral neuropathy [1,2].

We describe a 59 year old man who, 9 months after bariatric restrictive surgery for weight loss (sleeve gastrectomy), was admitted with a clinical presentation of recent (twice within the previous 5 days) recurrent left-sided acute ischemic cerebral stroke.

## PATIENT DESCRIPTION

A 59 year old man of North African Jewish descent was admitted to the Department of Medicine with left-sided motor and sensory deficiency defined as left hemi-syndrome. His symptoms had appeared 5 days earlier and he was admitted to another hospital with a diagnosis of a transient ischemic attack; he was discharged with statins and aspirin after resolution of the symptoms. However, 3 days after discharge his symptoms returned and he was admitted to our department.

Examination revealed left-sided motor weakness with sensory deficit and paresthesias and numbness in his left arm and leg, but no signs of extra-pyramidal pathological reflexes. A brain computed tomography and carotid and cerebral arteries CT angiography were normal and did not show any abnormality. Past medical history included type 2 diabetes mellitus and essential hypertension for 12 years, which were resolved following restrictive gastric bariatric surgery (sleeve gastrectomy) 9 months prior to the present admission. Since his operation he was taking multivitamins and exercised daily. Blood tests showed hemoglobin 13.6 g/dl, mean corpuscular volume 85.4 fL, mean corpuscular hemoglobin 28.6 pg/dl, leukocytes 8340/mm<sup>3</sup> and platelets 227,000/mm<sup>3</sup>. Vitamin B12 and folic acid levels were normal (380 pg/ml and 12.6 ng/ml respectively), thyroid hormone levels were normal (free thyroxine 1.29 ng/dl and thyroid stimulating hormone 0.083 mIU/ml). International normalized ratio was 1.37 and partial thromboplastin time 32.10 seconds. T-troponin was normal (0.001 ng/ml). Vitamin B1 level was not measured.

We suspected vitamin deficiency and immediately administered an intravenous injection of thiamine (vitamin B1 100 mg). Surprisingly, towards the end of the vitamin B1 infusion he declared that all his symptoms were gone and that he feels “great” without any motor or sensory deficits, paresthesias or numbness. We continued to treat him with intravenous vitamin B1 as well as other B complex vitamins and vitamin B12 sublingually, and folic acid. He felt perfectly well without any neurological deficit and was discharged after 1 week of

hospitalization with a diagnosis of a vitamin deficiency-related neurological event mimicking acute ischemic stroke.

## DISCUSSION

We describe a patient who was admitted to two different hospitals with the diagnosis of an acute neurologic vascular event [3]. We suspected that the patient suffered from post-gastrectomy Wernicke’s encephalopathy due to vitamin B1 deficiency and initiated vitamin supplementation: an intravenous injection of vitamin B1, sublingual vitamin B12 and folic acid. The immediate clinical response towards the end of the vitamin B1 infusion was convincing, with disappearance of the neurological complaints. We believe that the “neurovascular” event was caused by vitamin B1 deficiency. This syndrome has been described in patients undergoing gastric bypass surgery for weight loss who did not continue with vitamin supplementation after the operation. Most patients present with atypical neurological symptoms, which hamper rapid diagnosis [4,5].

A variety of neurological complications have been reported following weight loss surgery. These include Wernicke’s syndrome, Korsakoff encephalopathy, neurologic beriberi, Guillain-Barre syndrome, and polyneuropathy [2,4,5]. These disorders usually appear in patients who suffered from vomiting in the first few months after the surgery. In many cases weakness is the primary feature, followed by hyporeflexia, numbness, and extremity pain [5]. Most of the neurologic syndromes appear 6–10 months post-surgery. However, Choi and Scarborough [4] reported an 18 year old

female who presented 4 months post-laparoscopic Roux-en-Y gastric bypass surgery with generalized seizures and stroke, and the brain CT demonstrated a brain infarction [4].

The clinical presentation in our case indicated an acute ischemic stroke (but without any lesions documented by brain CT scan). The administration of intravenous vitamin B1 (100 mg) led to the immediate resolution of all the symptoms.

### Correspondence

**Dr. A. Blum**

Dept. of Medicine, Poriah Medical Center, Tiberias,  
Lower Galilee 15208 Israel

**Phone:** (972-4) 665-2688

**Fax:** (972-4) 665-2929

**email:** ABlum@poria.health.gov.il

### References

1. Scarano V, Milone M, Di Minno MN, et al. Late micronutrient deficiency and neurological dysfunction after laparoscopic sleeve gastrectomy: a case report. *Eur J Clin Nutr* 2012; 66 (5): 645-7.
2. Sekiyama S, Takagi S, Kondo Y. Peripheral neuropathy

due to thiamine deficiency after inappropriate diet and total gastrectomy. *Tokai J Exp Clin Med* 2005; 30 (3): 137-40.

3. Streifler JY, Raphaeli G, Bornstein NM, et al. Is the evaluation and treatment of transient ischemic attack performed according to current knowledge? A nationwide Israeli registry. *IMAJ* 2013; 15 (5): 236-40.
4. Choi JY, Scarborough TK. Stroke and seizure following a recent laparoscopic Roux-en-Y gastric bypass. *Obes Surg* 2004; 14: 857-60.
5. Kuhn AL, Hertel F, Boulanger T, Diederich NJ. Vitamin B1 in the treatment of Wernicke's encephalopathy due to hyperemesis after gastroplasty. *J Clin Neurosci* 2012; 19(9): 1303-5.