

Supratherapeutic international normalized ratio: an indicator of chronic malnutrition due to severely debilitating gastrointestinal disease

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Abstract

This case highlights the fact that Supratherapeutic INRs direct the attention of the treating physicians' team to the underlying severely debilitating gastrointestinal diseases. Prolonged fasting or starvation reduces vitamin K levels. Such patients are more sensitive to treatment with Vitamin K antagonist-based anticoagulants. Hence, the Supratherapeutic INR can be an objective indicator of chronic loss of appetite with poor nutritional status of the patient and therefore acts as a warning sign for diagnosis of severe debilitating primary gastrointestinal disease.

Case Report

A 59-year-old female weighing 45 kg with body mass index 16, presented with atypical chest pain. The patient was admitted as inpatient to rule out acute coronary syndrome. The past surgical history was significant for aortic valve replacement and endovascular graft repair of arch of aorta and persistent dissecting aneurysm of thoraco-abdominal aorta (Figure 1-4). The patient was on warfarin 7.5 mg therapy with target INR 2.5-3.5 for the prosthetic valve. The checked INR was 10. Besides warfarin, patient was on amlodipine, metoprolol, hydrocodone, acetaminophen, simvastatin, gabapentin, and temazepam at home. The other laboratory findings were blood urea nitrogen 16 mg/dL, serum creatinine 1.3 mg/dL, glucose 90 mg/dL, hemoglobin 11.9 g/dL, leucocytes 3.7 K/cumm, platelets 104 K/cumm, albumin 3.3 g/dL, total cholesterol 120 mg/dL, triglycerides 89 mg/dL, high-density lipoproteins 44 mg/dL, low-density lipoproteins 58 mg/dL, serum iron 34 mcg/dL, total iron binding capacity 299 mcg/dL, iron saturation 11% and serum ferritin 92 ng/mL.

Pre-albumin, serum vitamin B-12 and other nutritional indices were not tested at this admission. On further workup of the pain, it was found to be associated with very severe nausea, *as if someone pulling her stomach*. The patient had severe weight loss due to the avoidance of food altogether and marijuana abuse for medical as well as the recreational purposes. The esophagram (Figure 5, Figure 6) showed delayed esophageal emptying with findings suggestive of reflux. Esophagus and stomach were stretched, enlarged and extended down to the pelvis secondary to the enlarged dissecting thoraco-abdominal aortic aneurysm. The etio-pathogenesis for her pain was the severe pull on the stomach by the endovascular grafted large dissecting aneurysm of the thoraco-abdominal aorta. This pain was associated with the severe nausea, resulting in a loss of appetite that had been interfering with her food intake chronically and hence contributed to the Supratherapeutic INR because of the chronic lack of vitamin K food supplements. The treatment was not altered as the plan for the underlying very advanced atherosclerotic disease was palliative; however, the insight into the underlying etio-pathogenesis ensured that the patient received appropriate non-urgent care in her future emergency room (ER) presentations with chest pain and Supratherapeutic INR.

Discussion

The incidence of Supratherapeutic INR has been reported to be 11-13%.^{1,2} The average daily consumption of vitamin K in United States is about 60-80 micrograms per person and changes in vitamin K consumption can interfere with maintenance of narrow therapeutic window of INR levels. Though the usual focus is on adjusting the daily intake of vitamin K in patients with non-therapeutic INR levels,³⁻⁷ however the poor vitamin K ingestion by the patient may direct the physician attention to the overall poor food intake in the patient secondary to underlying debility gastrointestinal pathological process. The primary focus in the literature has been directed to predict prevalence and to develop guidelines for managing these non-therapeutic INRs. However, the underlying etio-pathogenesis of these non-therapeutic INRs can be equally important and critical for the long term prognosis and management of these patients. This case highlights the fact that supratherapeutic INRs direct the attention of the treating physicians' team to the underlying severely debilitating gastrointestinal diseases.

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Figure 1. Computed tomography angiography scan of the lower thoracic cavity in transverse section demonstrating the enlarged aneurysm of descending thoracic aorta compressing/stretching the lower esophagus.



Figure 2. Computed tomography angiography scan of the thoracic cavity in coronal section demonstrating the extent and location of the enlarged aneurysm of descending thoracic aorta.

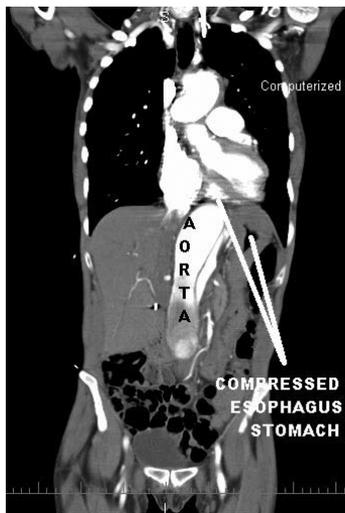


Figure 3. Computed tomography angiography scan of the abdominal cavity in coronal section demonstrating the extent and location of the dissecting aneurysm of abdominal aorta and associated compression/stretching of the lower esophagus and stomach.

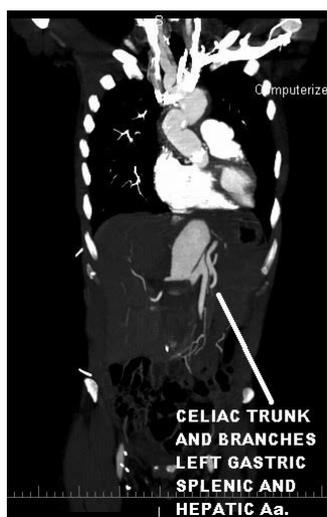


Figure 4. Computed tomography angiography scan of the origin and distribution of the celiac trunk from the dissecting abdominal aorta.

Conclusions

In summary, the supratherapeutic INR can be an objective indicator of chronic loss of appetite with poor nutritional status of the patient and therefore acts as a warning sign for diagnosis of severe debilitating primary gastrointestinal disease.



Figure 5. Esophagram scan demonstrating the stretched lower esophagus and tubular stomach in the left lumbar region.



Figure 6. Esophagram scan demonstrating the antrum and pylorus of the stomach in the left pelvic region.

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