Visual Journal of Emergency Medicine 15 (2019) 100562

Contents lists available at ScienceDirect

Visual Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/visj

Visual Case Discussion

Skin manifestations and lab abnormalities of familial hypertriglyceridemia

Aaron John Lacy, R Maglin Halsey-Nichols, Clifford L. Freeman, Karan S. Shah*

Emergency Medicine, Vanderbilt University Medical Center, Nashville, TN, USA

ARTICLE INFO

Keywords:
Familial hypertryglyceridemia
Eruptive xanthomas
Chronic pancreatitis
Diabetic ketoacidosis
Pseudohyponatremia

A 34-year-old male with a history of diabetes mellitus and familial hypertryglyceridemia presented to the emergency department (ED) with worsening of chronic abdominal pain over several days. Associated with this pain were bouts of nausea and vomiting, and he stated his blood sugar readings have been high. On examination, vital signs showed tachycardia but no fever, and there was epigastric tenderness without peritoneal signs. Skin examination revealed scattered, raised, firm, non-tender, and yellow-colored nodules (Figs. 1 and 2). Laboratory tests were notable for a sodium of 126, potassium of 4.6, chloride 92, CO_2 of 16, glucose of 696, and venous pH of 7.25. His urine was notable for a glucose level > 500 and ketones. Nursing staff brought his blood samples to the ED physician because of their odd coloration (Fig. 3). IV fluid resuscitation and an insulin drip were initiated. After these interventions, repeat BMP was notable for a sodium level of 120 and a glucose level of 155. A whole blood sodium level was sent, and returned at 135. Patient's triglyceride levels were 5680 mg/

Fig. 1. Skin manifestation of hypertriglyceridemia.

* Correspondence author.
E-mail address: karan.s.shah@vanderbilt.edu (K.S. Shah).

https://doi.org/10.1016/j.visj.2019.100562
Received 8 December 2018; Received in revised form 9 January 2019; Accepted 14 January 2019

Fig. 2. Skin manifestation of hypertriglyceridemia.

dL. Diabetic ketoacidosis (DKA) in the setting of familial hypertryglyceridemia. The patient's elevated anion gap (18), hyperglycemia, glycosuria, ketonuria, and acidosis were consistent with DKA. Type 3c diabetes mellitus (T3cDM) results from disease of the exocrine pancreas,[1] which in this patient was chronic pancreatitis secondary to familial hypertriglyceridemia. His skin findings are eruptive xanthomas, an early warning or late sign of chronic disease in hypertriglyceridemia.[2] DKA is a rare, but known complication, of T3cDM and pseudohyponatermia may lead to delay in diagnosis and treatment. Hyperglycemia and hypertrygyceridemia are known causes of pseudohyponatremia, and he remained hyponatremic after correction of his hyperglycemia.[3] Whole blood testing is an alternative testing modality to obtain an accurate sodium level in patient with suspected pseudohyponatremia.[4]

Fig. 3. High levels of triglyceride in the blood.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.visj.2019.100562.

References

1. Duggan S, Conlon K. Pancreatogenic Type 3c diabetes: Underestimated, under-appreciated, and poorly managed. *Practical Gastroenterol.* 2017:14–23.
2. Diby M, Belli R, McGraw T, Lee A. Eruptive xanthomas as a cutaneous manifestation of hypertriglyceridemia: A case report. *J Clin Aesthet Dermatol.* 2011;4(1):44–46 Jan;.
3. Milionis HJ, Liamis GL, Elisaf MS. The hyponatremic patient: A systemic approach to laboratory diagnosis. *CMAJ.* 2002;166(8):1056–1062 Apr 16.
4. Nguyen MK, Orenkian V, Butch AW, Kurtz I. A new method for determining plasma water content: Application in pseudohyponatremia. *Am J Physiol Renal Physiol.* 2007;292:F1652–F1656.

Questions

1. What is the skin manifestation seen with hyper-triglyceridemia (Figure 1 and 2)?
   a. Eruptive Xanthoma
   b. Dermatomyositis
   c. Acanthosis Nigricans
   d. Scleredema
   e. Erythema Nodosum

2. What is an alternative testing modality to obtain an accurate sodium level in a patient suspected to have pseudohyponatremia?
   a. Check glucose levels
   b. Check cholesterol levels
   c. Check whole blood levels
   d. Check triglyceride levels

Answers

1. Eruptive Xanthoma. Explanation: Diby, M, Belli, R, McGraw T, and Lee, A. Eruptive xanthomas as a cutaneous manifestation of hyper-triglyceridemia: A case report.

2. Check whole blood levels. Explanation: Nguyen MK, Orenkian V, Butch AW, Kurtz I. A new method for determining plasma water content: Application in pseudohyponatremia. Am J Physiol Renal Physiol. 2007;292;F1652-F1656.