

# Young man with diabetic lipaemia

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## DESCRIPTION

A sample of lipaemic blood with total cholesterol (TC) of 1404 mg/dL (<251 mg/dL) and triglycerides (TG) of 18 601 mg/dL (<195 mg/dL) is displayed in [figure 1](#). Low-density lipoprotein and high-density lipoprotein could not be calculated due to interference with the extremely elevated TG level. The patient was a previously healthy 21-year-old man presenting to our emergency department, with diabetic ketoacidosis (DKA).

DKA is an acute metabolic complication of insulin deficiency, characterised by acidosis, hyperglycaemia and ketosis. It may occur in 30% of patients with new onset type I diabetes. Insulin deficiency can lead to derangement in lipid metabolism resulting in lipolysis with excess production of fatty acid from adipose tissue and increased synthesis of TG. Severe hypertriglyceridaemia is a rare but well-recognised complication of DKA and is called 'diabetic lipaemia'. Previous case reports described patients with DKA and TG levels between 11 758 and 33 570 mg/dL.<sup>1 2</sup> In all patients, the lipid levels normalised after treating

the DKA.<sup>1 2</sup> The pathogenesis of diabetic lipaemia is not completely understood. Heterozygous mutations of lipoprotein lipase (LPL), a key insulin-dependent enzyme in degradation of TG, might play a role.<sup>2</sup> However, the majority of patients with diabetic lipaemia did not have a genetic abnormality in the LPL.<sup>3</sup>

In our patient, TC decreased in 3 days to 963 mg/dL, and TG to 5669 mg/dL. Plasma glucose levels rapidly normalised with insulin therapy. After 4 weeks, the patient visited the outpatient clinic, with TC of 135 mg/dL and TG of 106 mg/dL. The elevated TG resolved without an anti-lipid agent.

## Learning points

- ▶ Diabetic ketoacidosis can lead to an extreme dysregulation of lipid homeostasis, called diabetic lipaemia.
- ▶ The extremely elevated triglyceride levels can completely resolve by treating the diabetic ketoacidosis, without using an anti-lipid agent.

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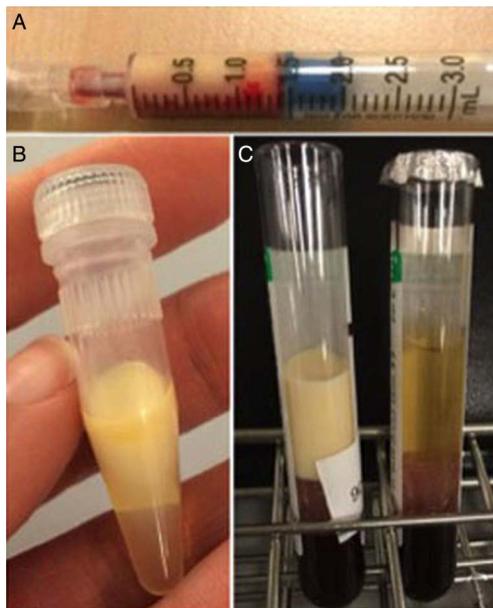
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## REFERENCES

- 1 Lucchetti G, Granero AL, Almeida LG, *et al*. [Severe hypertriglyceridemia in diabetic ketoacidosis: case report]. *Arq Bras Endocrinol Metabol* 2009;53:880–3.
- 2 McLean AG, Petersons CJ, Hooper AJ, *et al*. Extreme diabetic lipaemia associated with a novel lipoprotein lipase gene mutation. *Clin Chim Acta* 2009;406:167–9.
- 3 Radhakutty A, Shen J, Hooper AJ, *et al*. Quantification and genotyping of lipoprotein lipase in patients with diabetic lipaemia. *Diabet Med* 2014;31:1702–7.



**Figure 1** (A) Photograph of an arterial blood sample. (B) Photograph of a serum sample extracted by centrifugation from the venous blood sample. (C) Photograph of a venous blood sample.



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