

When glycosylated hemoglobin is a true roller coaster

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Corticosteroids negatively interfere with glycemic control. We report a case of a patient with type 2 diabetes mellitus with poor glycemic control caused by coercion to intramuscular corticosteroid administration at work. The relationship established with the patient allowed her to speak openly about her working environment, allowing her to trust the information provided by her family physician ensuring that she rejected new attempts to medicate her with that drug.

Keywords: bad working environment, coercion, corticosteroids, diabetes mellitus, poor control

The global prevalence of diabetes mellitus (DM) has been significantly increasing in the last decades, reaching approximately 8.5% of the world's adult population.¹ In Portugal, this disease's estimated prevalence in the adult population is approximately 13.3%, and is associated with significant morbidity and mortality.² Glycemic control plays a central role in DM, and it's crucial to the prevention of complications and therefore the mortality associated with this disease.¹

Corticosteroids are one of the drug classes that negatively interfere with glycemic control, through the increase in gluconeogenesis, decrease in glucose tolerance, and decrease in sensitivity to insulin, which can lead to decompensation of the disease.^{3,4} Thus, these drugs are generally contraindicated in patients with this condition.³

We presented a 50-year-old divorced woman. She integrates a low social class (Graffar scale IV), living with her 2 daughters, whom she supports financially. She scores 7 points in Smilkstein Family APGAR (highly functional family). Type 2 DM, essential hypertension, dyslipidemia, overweight, strabismus, and glaucoma. Former smoker of 12.5 pack-year. No relevant family background. Medicated with metformin 850 mg + pioglitazone 15 mg bid; gliclazide 30 mg tid; lisinopril 20 mg id, and travoprost 0.04 mg/mL.

The patient worked as a nursing home assistant in a nursing home since 2008, performing several tasks, many of them requiring intense physical labor. She had an excessive workload, working >10 hours everyday of the week and received a low

income. The patient, as well as many of her coworkers, had a bad relationship with her boss and there was an overall bad working environment. The patient was unhappy about her employment situation, but kept working in this place nevertheless, motivated by her economic situation.

She was diagnosed with DM in June 2011, presenting with a glycosylated hemoglobin (HbA1c) of 7%. She was initially medicated with metformin 850 mg bid. Between 2011 and 2013, even with therapeutic changes, the patient kept a poor glycemic control (HbA1c 7.4–7.6%). In December 2013, she presented with a remarkable increase in HbA1c (9.2%). We discussed with the patient what could have possibly caused that increase, asking her about a possible poor adherence to the prescribed medication, which the patient denied. She also rejected initiating insulin therapy. However, in 3 months, the subject returned to her usual HbA1c values without significant therapeutic intervention.

Between 2015 and 2016, there was a significant variation in the patient's glycemic control: HbA1c: 11.8% (February 2015)—9.3% (June 2015)—8.0% (November 2015)—11.8% (June 2016) (Fig. 1).

Toward this abrupt variation in her glycemic control, with unforeseen raises and falls in her HbA1c without known cause, we again addressed the patient regarding possible factors that could influence her glycemic control. Once more, the patient reassured us that she was compliant with the prescribed medication and that in no way did she fail to take the medication as prescribed. Then we proceeded to ask the patient about any changes in her daily routines (diet or physical exercise) that she also denied.

When asked if she, however, had recently taken any other medication, the patient ended up confessing that she was coerced by her boss to take intramuscular medication without doctor's prescription when she presented with acute pain related to physical efforts in her workplace. The patient was unable to leave work to make an appointment regarding those complains with her family physician, and she also could not have any days off with fear to lose her job. This had been occurring since 2014, and she neglected to talk about that in previous appointments because she felt embarrassed about that situation and because she thought that it had nothing to do with her glycemic control.

This medication was “prescribed” by her boss, who was not a physician, and she did not know who provided that medication to the nursing home. In addition to that, the medication was administered by someone without health training and without preparation to administer such a medication.

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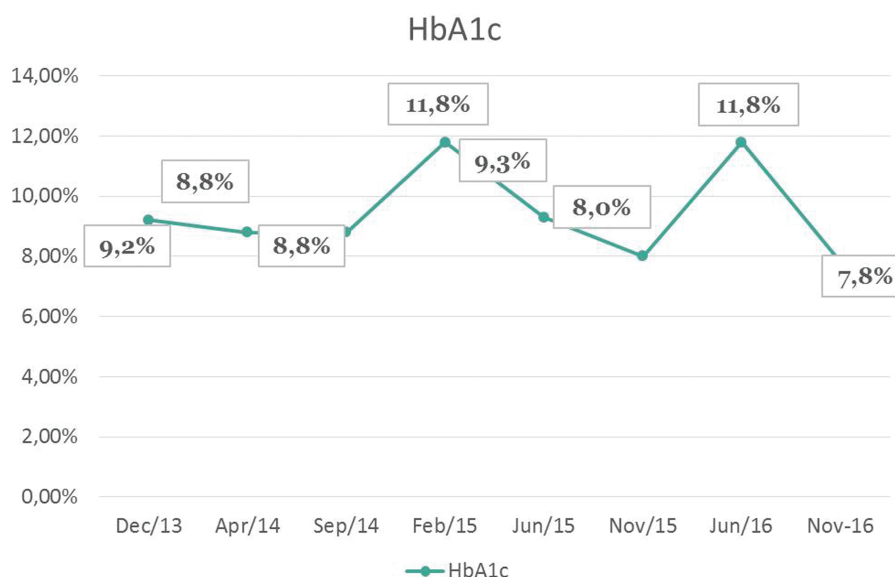


Figure 1. Patient's glycemic control variation between 2013 and 2016.

The patient managed to bring us the name of the medication—betamethasone. This medication had been taken in December 2014 and January 2015, and again in April 2016 and May 2016. Therefore, we managed to establish a temporal relationship between its administration and the sudden raises in HbA1c: 2 administrations in 2014 to 2015 with the HbA1c value in February 2015 raising to 11.8% and then lowering to 8.0% when there was no administration of such drug medication; 2 administrations in 2016 with the HbA1c value in June 2016 raising to 11.8%.

We explained to the patient the impact of corticosteroid administration on her poor glycemic control, which motivated the client to reject new attempts from her boss to “medicate” her with that drug. There was a hasty decrease in her HbA1c in 5 months, from 11.8% to 7.8%, without any other intervention.

The patient ended up changing jobs, and works as a cleaning assistant in a gym since October 2016.

In fact, control of DM is dependent on multiple factors, such as adherence to therapy, adoption of adequate lifestyles, screening, and control of possible complications of the disease. The effective management of this disease also, however, includes discussing with the patient the different options that exist at his disposal, the rational for each choice, and thus enabling him to take active participation in the decision process regarding his illness management.

In this case, the family physician was in a privileged position, where he was able to cross the longitudinal information of DM metabolic control with the intramuscular administration of medication, establishing an association between these 2 factors. The relationship established with the patient was fundamental to allow the patient to be able to speak openly of the problems with

her working situation and the administration of medication not prescribed by her doctor.

This case highlights the importance of the holistic approach in the control of chronic diseases.⁵ In this specific case, the relationship established with the patient over time was a determining factor, allowing her physician to explain to the patient the impact of corticosteroids on glycemic metabolism, ensuring that she rejected new attempts to medicate her with that drug.

Conflicts of interest

The authors report no conflicts of interest.

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