

Post-Coital Hypoglycaemia

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Abstract

Hypoglycemia is a common complication of T1DM. Physical exercise is an important risk factor for hypoglycaemia in T1DM. We report a 19-year-old gravid female patient with T1DM who developed severe recurrent hypoglycemia with loss of consciousness after sexual intercourse. These recurrent severe episodes have disappeared by following simple measures and precautions that involve high caloric oral intake and insulin adjustment by the patient before and after the sexual activity. Based on this case, sexual activity might be an important risk factor for developing hypoglycemia in T1DM. Hence, clinician must be aware of this phenomenon. More research is needed to understand and explain the relationship between sexual activity and hypoglycemia especially in diabetic patient.

Keywords: Type 1 Diabetes Mellitus; Hypoglycemia; Physical activity; Sexual activity

Introduction

Regular physical activity is important for patients with diabetes, and it has numerous benefits in patients with T1DM [1]. Physical exercise can result in hypoglycemia during and at any time up to 24 hours after the bout [2-4]. The mechanism of exercise-associated hypoglycemia is multifactorial and has traditionally included exercise-associated increases in insulin sensitivity and thus glucose uptake, inadequately replenishing endogenous hepatic and muscle glycogen stores, and balancing oral carbohydrate intake with exogenous insulin delivery [3]. Normally, counter-regulatory response overcomes this exercise-induced hypoglycemia through inhibition of insulin release, glucagon activation, secretion of epinephrine, and other neuro-endocrines, such as growth hormone, cortisol and norepinephrine [3]. Despite of the importance of exercise in diabetes, it frequently results in hypoglycemia, especially in patients with T1DM [2-5]. The pathogenesis of exercise-induced hypoglycemia in T1DM is known to be related to the loss of the normal counter-regulatory response of alpha-glucagon secreting pancreatic cells and epinephrine to the hypoglycemia during the exercise [3]. To some extent, sexual activity may mimic regular physical exercise. The average bout of sexual activity lasts about six minutes, and an average person in his early to mid-30s might expend approximately 21 Kcal during full sexual intercourse episode [6]. Sexual activity may be considered a risk factor for hypoglycemia in T1DM. The literature does not address well the association between sexual activity and clinical hypoglycemia. We report this case with recurrent hypoglycemia associated with sexual intercourse to raise this issue for discussion and further research.

Case Report

The case study concerns 19-year old female with T1DM at 20 weeks gestation. She presented to endocrinology clinic, Diabetic & endocrinology center at King Fahad hospital in Hafouf, ALAhsa Eastern Saudi Arabia, on 15-August-2014 seeking help for recurrent

acute refractory hypoglycemia. Her husband described the event of hypoglycemia as severe and frightening, manifested by full loss of consciousness. During the episodes, the husband tries to wake her up by physical stimuli, he checks her random serum glucose, which usually ranges from 20 to 30 mg/dl- during the attack, and he starts to give her oral honey without any noticeable response. Eventually, he transfers her to the emergency room at local hospital in unconscious state, where she receives parental dextrose and glucagon after which she recovers from her hypoglycemia. This significant event has occurred four times over the last few months from the date of the report in the clinic, with no history of similar episode occurring in her life. She did not practice physical exercise before the events. The husband expressed excessive concerns about these recurrent hypoglycemic attacks and wished to prevent further episodes. According to her mother, she has always had these hypoglycemic episodes when the husband who is 25-year old comes home from his work that is more than 400Km far. Upon further questioning, the husband admitted that this hypoglycemic episode occurs only after intimate sexual relationship, when he comes home for the weekend after 5 days of absence. The patient's past medical history is significant for T1DM with which she was diagnosed first at six years of age. Initially, before the above described hypoglycaemic episodes, she had a history of uncontrolled hyperglycemia, HbA1c, of about 11% with frequent insulin doses up titration. Recently, her insulin doses were adjusted as with total dose of 44 international unit (HN24, HR12 at morning), (HR6 at Noon) and (HN6,HR6 at evening) to control her HbA1c level at an average of around 6.8%. The patient married 2 years ago and she reported one abortion attributed to uncontrolled Diabetes. Apart from insulin, she never used any medications. No other chronic diseases or surgeries were reported. Clinically, she has developed well, without any distress. No signs of dehydration were noticeable.

P: 80 beats/min; (regular), BP: 125/70, T: 37°C, RR: 18 breaths/min., BMI: 26Kg/m²

Thyromegaly or abnormal neck swelling were not evident. Her abdomen was soft and lax without palpable mass or evidence of organomegaly. All other systemic examinations, including neurologic system, were within normal.

Routine laboratory investigations during her visit to the clinic indicated abnormally high fasting blood glucose and HbA1c with mildly elevated total cholesterol. Other laboratory blood investigations were not significantly abnormal (Table1).

Serum biochemical test	Value	Normal value
FBS	8mmol/L	3.9 – 6.1mmol/L
HbA1c	6.8%	4.8 – 6mmol/L
Creatinine	34umol/L	53-120umol/L
Sodium	135mmol/L	133-148mmol/L
Potassium	4.3mmol/L	3.4-5.1mmol/L
Calcium	2.2mmol/L	2.1-2.6mmol/L
Chloride	107mmol/L	98 – 107 mmol/L
Aspartate Amino Transfe	17U/L	0-40 U/L
Alanin Amino Transferase	15U/L	30 – 65 U/L
Total cholesterol	6.4mmol/L	1.3 – 6.2mmol/L
Triglycerides	1.63mmol/L	0.3 – 2.2 mmol/L

Table1: Routine laboratory blood investigations

Discussion

Our case was a T1DM patient who experienced four episodes of severe hypoglycaemia temporally related to sexual activity, according to the husband description. Accordingly, we considered the sexual activity as a risk factor for hypoglycemia in T1DM. Interestingly, the data in medical literature on the relationship between sexual activity and hypoglycemia is scarce even in diabetic patient. This may indicate underestimation of this issue in spite of the possible critical consequences of hypoglycaemia [7], as happened in our patient who developed an intractable loss of consciousness after sex four times. We proposed that the sexual activity is a factor for developing hypoglycemia in T1DM patient, as sexual intercourse is comparable to regular exercise, particularly when it is prolonged, frequent, and highly intimate in young individual, as in our scenario in which the husband meets his wife after a period of absence [6]. Sexual activity may be followed by a period of relaxation and sleep that interferes with the patient’s awareness of hypoglycemic symptoms, which can be overcome by oral intake of high caloric food before the progression of the hypoglycemic episode. Our patient had T1DM for more than 5 years, which might be reducing the counter-regulatory response for hypoglycemia according to current medical literature [3].

Few measures, such as high caloric oral intake or skipping insulin shot and adjusting the insulin pump can be considered before sex to protect diabetic patient from hypoglycaemia [2,7]. Nevertheless, the clinician and the patient might overlook these simple daily life measures. Therefore, we gave our patient a direct clear advice and recommendations before any sexual activity:

- To check or monitor serum glucose before and after sexual activity.
- To eat just before or after sex.
- To have snack before going bed and always keep dry snacks or meals in the bed shelves.
- Skip or titrate down the insulin shot that precedes the intended sexual intercourse.
- When the patient has insulin pump, we recommend disconnecting it or setting it up temporarily in a low basal mode before the intended sexual intercourse.

These simple measures were highly effective in our patient, as observed in further follow up appointment in the endocrinology clinic, as she reported complete disappearance of these hypoglycemic episodes over a period of 6 months with reasonably controlled blood sugar.

In managing patient with T1DM, the clinician should consider the possibility of hypoglycemia that occurs commonly and may be non-predictable. Although our patient was having difficulty in controlling hyperglycemia, she got frequent attacks of severe hypoglycemia with unusual post-coital timing. This has raised several questions. Specifically, what is the extent to which sexual activity induces hypoglycemia in T1DM? What is the exact mechanism of sex-related hypoglycemia and how aware are the clinicians, diabetic educators, and dieticians about this phenomenon?

This encouraged us to report this case to:

- Increase the awareness of health care provider and even the diabetic patient about the possibility of post-coital hypoglycemia in T1DM.
- Suggest the ways to overcome this potentially dangerous phenomenon through simple practical home based measures done by the patient and his spouse under supervision of the clinician.
- Motivate more research in this issue.

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