Indian Journal of Clinical Practice, Vol. 31, No. 2, July 2020

Lipodystrophy at Unusual Site Due to Unusual Cause

BV NAGABHUSHANA RAO

CASE PRESENTATION

A 58-year-old female patient consulted us for her diabetes control. She was a known diabetic for the last 18 years and had been on insulin injection the last 10 years. She was on 30 units of Human Mixtard before breakfast and 25 units before dinner. In addition, she was also taking teneligliptin 20 mg and metformin 500 mg sustained release before lunch. Her blood sugars were erratic. She was frequently hyperglycemic and even a small increase in insulin dose landed her in hypoglycemia.

Physical examination did not reveal significant abnormality except for a soft tissue swelling on the ventral aspect of her left forearm (Fig. 1). The swelling was 6 × 8 cm in size mobile and had no erythema or tenderness. Laboratory investigations were within normal limits and glycated hemoglobin (HbA1c) was 8%.

We discussed further with her regarding the methodology of storing, loading, measuring and injecting insulin. We found that she was always injecting insulin on the ventral aspect of her left forearm. She lived alone in a place where medical facilities were scarce. She was afraid to take insulin on the abdomen as she thought she might go deeper and hurt her intestines. She could find none in her village who could inject insulin. Due to financial constraint and nonavailability, she would not changing the needles frequently.

As she had been injecting insulin subcutaneously at the same site, she developed lipohypertrophy (LH) over her left forearm. Absorption of insulin at the site of LH is erratic, predisposing her to fluctuations in blood sugar. She was given a live demonstration of administration of insulin over various sites in her body and she developed confidence to inject insulin in her abdominal skin. She stopped injecting to her left forearm and the swelling regressed gradually.



Figure 1. Soft tissue swelling on the ventral aspect of left forearm.

DISCUSSION

Lipohypertrophy (LH) and lipoatrophy (LA) are frequent problems in clinical practice in patients on subcutaneous insulin. LH is a lump under the skin caused by an accumulation of fat at the site of many subcutaneous injections of insulin. As high as 69.8% of patients with type 1 diabetes in India were found to have LH at one time or another during their lifetime, illustrating the frequency of this problem.[1] A systematic review and meta analysis reveal that 38% of the people who take insulin had LH.[2] The incidence of LH has come down drastically with the discovery and utilization of newer insulins, which are less antigenic.

LH can delay the absorption of insulin and jeopardize diabetes control. There were reports in literature where poor absorption of insulin through LH was the culprit of inducing diabetic ketoacidosis.[3]

In contrast, it was reported that erratic absorption may precipitate hypoglycemia. Recurrent hypoglycemia due

Dept. of Medicine
Queens NRI Hospital, Visakhapatnam, Andhra Pradesh
Address for correspondence
Dr BV Nagabhushana Rao
Dept. of Medicine
Queens NRI Hospital, Visakhapatnam, Andhra Pradesh - 530013
E-mail: bhavanavnrao@gmail.com

IJCP SUTRA: "People with comorbid conditions, pregnant women and the elderly should not ignore flu."

to held up insulin in LH lesion had been reported.[4] In a study of LH in type 1 diabetes, it was found that injection at the same site recurrently is a major factor inducing LH rather than the size of the needle or its reuse.[5] It is very interesting to learn that organized LH interventions with clinical, biological and economical parameters could help to regress LH early and prevent new lesions.[6] Though clinical examination is essential to diagnose LH, an ultrasound examination may give an early clue, especially in those who are markedly obese.[7]

CONCLUSIONS

It is important to educate the patient the need of rotating the site of insulin injection. Healthcare workers should check the injection sites frequently.

REFERENCES

1. Gupta SS, Gupta KS, Gathe SS, Bamrah P, Gupta SS. Clinical implications of lipohypertrophy among people with type 1 diabetes in India. Diabetes Technol Ther. 2018;20(7):483-91.
2. Deng N, Zhang X, Zhao F, Wang Y, He H. Prevalence of lipohypertrophy in insulin-treated diabetes patients: A systematic review and meta-analysis. J Diabetes Investig. 2017;9(3):536-43.
3. Barola A, Tiwari P, Bhansali A. Insulin-mediated lipohypertrophy: an uncommon cause of diabetic ketoacidosis. BMJ Case Rep. 2017;2017:bcr2017220387.
4. Gentile S, Strollo F, Corte TD, Marino G, Guarino G; Italian Study Group on Injection Techniques. Skin complications of insulin injections: A case presentation and a possible explanation of hypoglycaemia. Diabetes Res Clin Pract. 2018;138:284-7.
5. Barola A, Tiwari P, Bhansali A, Grover S, Dayal D. Insulin-related lipohypertrophy: Lipogenic action or tissue trauma? Front Endocrinol (Lausanne). 2018;9:638.
6. Smith M, Clapham L, Strauss K. UK lipohypertrophy interventional study. Diabetes Res Clin Pract. 2017;126:248-53.
7. Kapeluto JE, Paty BW, Chang SD, Meneilly GS. Ultrasound detection of insulin-induced lipohypertrophy in Type 1 and Type 2 diabetes. Diabet Med. 2018;35(10):1383-90.

■■■■

Redefine Cardiac Injury Marker Cut-offs to Predict 28 Days Mortality in COVID-19 Inpatients

The abnormal cardiac biomarker pattern seen in patients with COVID-19 is significantly associated with a higher risk of death, and the cut-offs of those markers for effective prognosis of 28-day mortality of COVID-19 appear to be much lower than for regular heart disease, at 49% of currently recommended thresholds, according to a study in *Hypertension*.

The biomarkers are high-sensitivity cardiac troponin I (hs-cTnI), creatine kinase-MB (CK-MB), NT-proB-type natriuretic peptide (NT-proBNP), creatine phosphokinase (CK) and myoglobin (MYO).

Their retrospective cohort study enrolled patients diagnosed as COVID-19 and admitted to 9 hospitals in Hubei Province, China, from December 31, 2019, to March 4, 2020. The study included 3219 patients with myocardial biomarker measurement, and 2814 without. The primary endpoint was 28-day all-cause mortality.

Compared to patients without cardiac injury biomarker measurement, patients with biomarker values were older (median age at 57) and had higher percentages of pre-existing comorbidities and more severe symptoms.

All five myocardial biomarkers were significantly associated with 28-day all-cause death of COVID-19.

After adjusting for age, gender and comorbidities such as hypertension, diabetes, coronary heart disease and cerebrovascular disease, the 28-day mortality hazard ratio for hs-cTnI was 7.12, NT-proBNP was 5.11, CK-MB was 4.86, MYO was 4.50, and CK, a much less specific cardiac biomarker, was 3.56.

In patients showing heart injury during the entire hospitalization, neutrophil percentage and CRP were rapidly and simultaneously increased after disease onset, immediately followed by the increases of CK-MB, MYO and hs-cTnI.

The significant elevation of IL-6 occurred only after the increases of these myocardial markers and was highly elevated mainly in patients with evidence of cardiac injury.