A Case of Dasatinib-Induced Hypoglycemia

MICHELLE LUNDHOLM¹, GERALD CHARNOGURSKY²

¹Department of Medicine, Loyola University Medical Center, Maywood, IL 60153
²Department of Medicine, Division of Endocrinology, Loyola University Medical Center, Maywood, IL 60153

INTRODUCTION

Tyrosine kinase inhibitors (TKIs) are used in multiple malignancies and may have metabolic effects. Dasatinib is a second-generation TKI and may have a role in patients with T2DM and Philadelphia-chromosome positive (Ph+) acute lymphoblastic leukemia (ALL) on dasatinib.

CASE PRESENTATION

A 65-year-old M presented with weakness, diaphoresis, and POC glucose 30 mg/dL. Medical history:

- T2DM (HgA1c 10.2%) on insulin 120 U/day
- 170 U/day with high-dose steroids
- Ph+ ALL on dasatinib 140mg/day x1 week
- HTN and CAD s/p PCI to LAD '16

DISCUSSION

This case demonstrates profound hypoglycemia from dasatinib.

Imatinib did not have the same effect

How does the type of TKI matter?

- TKIs decrease blood sugars to varying degrees
- 47% of DM patients on any TKI stopped one or more of their anti-hyperglycemic agents

Dasatinib has greatest metabolic effects—decreases random blood glucose by an average of 53 mg/dL in DM and non-DM patients (Figure 2).3

Mechanistic difference: dasatinib targets c-Src→ tyrosine free calcium→ Insulin secretion→ c Src: tyrosine kinase in normal and malignant cells. Dasatinib is selective for the c-Src family.

CASE DETAILS

Hospital course:

- Dasatinib discontinued for hypoglycemia, thrombocytopenia, and NSTEMI (PCI to RCA)
- Insulin doses adjusted to 33% pre-treatment dose (120 U/day → 40 U/day) (Figure 1.)
- Discharged on imatinib 400mg daily
- Becomes hyperglycemic 1 week later, increased to 145 U/day insulin

CONTINUATION

Does the malignancy matter?

- This is the first ALL case reported
- Documented in CML4,5–10
- Anecdotally greatest effect if the cancer responds to TKI11
- No data in patients w/o cancer

Next steps

- TKIs may have a role in preventing and treating DM11–12,14
- Limited by tolerability and other side effects

REFERENCES


CONTACT INFORMATION:
Michelle Lundholm, MD. Address: Loyola University Medical Center 2160 South 1st Avenue Maywood, IL 60153. Tel: 708-216-6000. Email: Michelle.Lundholm@LUMC.edu

KEY POINT
Tyrosine kinase inhibitors can contribute to profound hypoglycemia requiring modification of insulin dosing.

CONCLUSIONS
- TKIs cause hypoglycemia via multiple mechanisms
- Dasatinib has the greatest metabolic effect
- Insulin regimens will likely need adjustment when patients are started on TKIs
- TKIs could potentially be adapted as novel anti-hyperglycemic agents