

Pseudo-hypoxemia and Artifactual Hypoglycemia in Raynaud's Phenomenon: A Novel Case Report

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Learning Objectives

- Recognize the limitations of peripheral glucometer and pulse oximetry readings in Raynaud's phenomenon

Introduction

- Raynaud's phenomenon is an exaggerated vasospasm of peripheral vasculature triggered by cold temperatures or strong emotional responses

Case Presentation

75 year old woman with history of ESRD, Sjorgen's syndrome and rheumatoid arthritis presents with low capillary blood glucose (CBG) and hypoxemia.

- Asymptomatic CBG of 28 and peripheral O2 saturation of 88%
- Treated with D50 injections, glucagon, continuous dextrose infusions and nasal cannula O2 supplementation
- Fluctuating serial CBGs, as evidenced on adjacent table, with persistent oxygen desaturation on pulse oximetry
- Discrepancies between plasma glucose and CBG measurements
- History of rheumatologic disorders and positive screening questions suspicious for Raynaud's phenomenon
- Passive rewarming of hands resulted in normal repeat CBG and O2 saturation on peripheral oximetry

Approach to the Clinical Diagnosis of Raynaud's Phenomenon:

Screening Questions

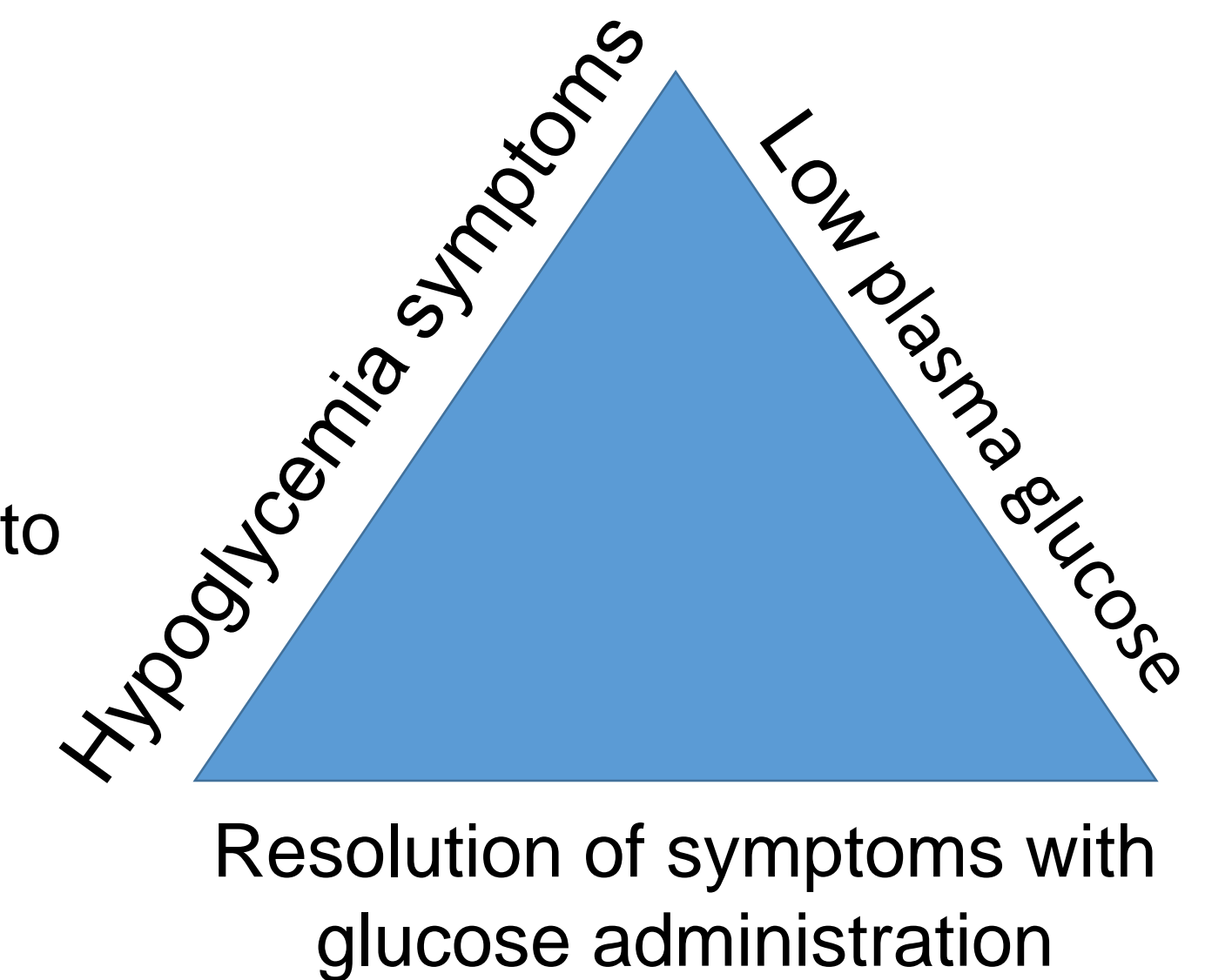
- Unusual digit sensitivity to cold
- Change of digit color with cold exposure
- Blue and/or white color change with cold exposure

Time	CBG (mg/dL)	Plasma Glucose (mg/dL)
7:59		135
8:03	26	
15:18	<10	
15:23	126	
17:28	15	
17:30	165	

Whipple's Triad:

Clinical features suggestive of insulinoma

- Patient did not meet criteria to suggest endogenous hyperinsulinemic hypoglycemia



Take Home Points

- Mechanism of pseudo-hypoxemia and artifactual hypoglycemia is due to increased peripheral oxygen and glucose extraction, respectively, in digital tissues because of decreased peripheral vasculature perfusion
- Consider utilizing Raynaud's screening questions if inconsistencies present in laboratory values and clinical findings

References

Bishay RH, Suryawanshi A. Artifactual Hypoglycaemia in Systemic Sclerosis and Raynaud's Phenomenon: A Clinical Case Report and Short Review. *Case Rep Endocrinol.* 2016;2016:7390927. doi:10.1155/2016/7390927