

Management of Severe Insulin Resistance

24 Extreme Insulin Resistance in the Hospital: 2 Cases and Their Management

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Background: Illness and medication increase insulin resistance in hospitalized patients. Insulin infusion rates of 10 to 20 U/hr are common in intensive care unit patients to overcome this resistance.

Objective: To present 2 exceptional cases in which patients required an insulin infusion rate of >10,000 U/hr.

Methods: Neither patient had known diabetes mellitus. In Case 1, IV insulin was started at admission for pancreatitis at 13 weeks' gestation. The patient in Case 2 was initially treated with insulin for 3 days for hyperglycemia after coronary artery bypass.

Results: In Case 1, IV insulin started at admission for pancreatitis at 13 weeks' gestation was restarted after septic shock developed (treated with vasopressors and steroids) after spontaneous abortion with partial placenta retention. The protocol-adjusted insulin rate was increased to 10,400 U/hr, which achieved minimum blood glucose (BG) levels of 148 mg/dL. Empiric reduction to 500 U/hr resulted in BG levels of 205 to 224 mg/dL. In case insulin was acting as its own inhibitor, it was stopped for 1 hour, restarted at low rates, and increased up to 50 U/hr 7 times before stabilization 7 days later at ~3 U/hr, with BG levels of 71 to 102 mg/dL. Hypoglycemia only developed after the patient was switched to SC insulin, and euglycemia was subsequently achieved without antihyperglycemic agents. The patient in Case 2 postoperatively experienced aspiration pneumonia and subsequent respiratory and acute renal failure. Intravenous insulin was resumed, with BG levels reaching >400 mg/dL. The rate was increased to 19 U/hr, which lowered BG level to 290 mg/dL. BG level increased with empiric rate reductions. Antibodies were suspected and steroids were administered, with hypoglycemia developing 36 hours later. Insulin antibodies were negative in both cases.

Conclusion: Sepsis, steroids, and vasopressors increase insulin resistance, but generally not to the degree seen in these 2 cases. Disruption of receptors and postreceptor signaling may underlie certain cases of insulin resistance.
