Perioperative Endocrine Cases

What physiologic changes during the perioperative period might contribute to hyperglycemia?

Why is controlling glucose important in the perioperative setting?

Patient 1

A 44-year-old female with obesity and type II diabetes mellitus is planned for ventral hernia repair. She takes metformin 500 mg twice a day and her hemoglobin A1C was recently 7.1%. She does not check her glucose.

How often should her glucose be checked perioperatively?

How should we manage her diabetes medications going into surgery?

How will we treat her diabetes while she is nil per os (NPO)?

Patient 2

A 42-year-old male with obesity and poorly controlled type II diabetes mellitus is planned for a total knee arthroplasty for severe osteoarthritis. He is on 34 units of 70/30 insulin in the morning and 20 units of 70/30 insulin with dinner. His fasting glucose values at home are 150-200. He does not check his prandial glucose values. His hemoglobin A1C is 8.0%.

How much insulin should he take on morning of surgery?

How often should we check his glucose intraoperatively, and postoperatively?

How should we manage his glucose intraoperatively and post-operatively?

Patient 3

A 67-year-old male is admitted with an aortic dissection. He has untreated hypertension and untreated diabetes mellitus. His glucose is 320 mg/dl. HbA1c is unknown.

How should we manage his glucose on the way to the operating room?

Patient 4

A 72-year-old male with history of type II diabetes mellitus is going for colonoscopy. He diabetes is being treated with glyburide 10 mg twice a day. His fasting glucose at home is 80-130 mg/dl. His hemoglobin A1C is 6.7%.

How should we manage his oral hypoglycemic going into the colonoscopy?

Patient 5

A 55-year-old female with a history of hypothyroidism is planned for elective laparoscopic cholecystectomy. She ran out of her levothyroxine for several weeks and only had it refilled about a week ago. She has no cold intolerance, no skin changes, no fatigue, a normal bowel pattern, and normal mentation. Her blood pressure is 120/80 and her heart rate is 72. Her exam is normal, including normal skin and hair exam. Her deep tendon reflexes are normal. Her thyroid stimulating hormone (TSH) level is 12 uIU/ml (0.4-4.0). Thyroxine (T4) and free thyroxine (free T4) levels are in the low normal range. She is on synthroid 50 mcg every day.

Should we postpone her surgery?

What if her TSH was 80 uIU/ml and her heart rate were 44?

Patient 6

A 46-year-old female with history of hypertension is planned to undergo anterior cruciate ligament reconstruction. She has felt nervous recently and thyroid testing showed TSH=0.25 uIU/ml (0.4-4.0). T4 was 11.2 ug/dl (6.1-12.2) and free T4 was 1.2 ng/dl (0.7-1.5). Anti-microsomal antibodies are positive. Her blood pressure is 134/76 and her heart rate is 80. Her exam shows a diffusely enlarged thyroid that is nontender. There is no thyroid bruit. Her hair and skin are normal and her deep tendon reflexes are normal.

Should she proceed with surgery?

What if her exam showed heart rate of 102 and her labs showed TSH =0.08 uIU/ml, T4=16 ug/dl, and free T4=2.1 ng/ml?

Patient 7

A 54-year-old female with asthma is scheduled for total knee arthroplasty. Her asthma is currently well controlled on inhaled fluticasone and montelukast. During the past year, she has been treated for asthma exacerbations seven times with 7-10 days of prednisone, 40 mg daily. Her asthma has been better since her husband quit smoking 3 months ago.

What is the likelihood of hypothalamic-pituitary-adrenal axis (HPA) suppression in this patient?

Should she be treated with supplemental glucocorticoids ("stress dose steroids") and if so, how much?

Patient 8

A 38-year-old female with a history of avascular necrosis of the hip and Crohn's disease is planned for a total hip arthroplasty. She was on prednisone 40 mg daily for 3 months, which has been tapered to 5 mg every other day over the past 3 months. She is now on cyclophosphamide as well.

What is the likelihood of HPA axis suppression in this patient?

Should she be treated with stress dose steroids and if so, how much?

What is she were going for a minor procedure (such as breast surgery)?

What if she were going for a major procedure (such as coronary artery bypass)?