DIABETES for psychiatrists

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Key tasks: Assess glycemic control and adherence to diabetes treatment; educate patient about need for glycemic control and risks of long term complications; assess whether psych meds are worsening diabetes and causing weight gain.

Pathophysiology. Normally, the beta cells of the pancreas produce insulin and release it continuously into the bloodstream. Insulin acts as a key to unlock receptors on cells, opening them up like pores to allow the entry of glucose. Insulin levels normally rise after a meal to allow our cells to absorb more glucose.

In Type 1 diabetes (insulin dependent diabetes mellitus, or IDDM) the pancreas stops producing insulin (an autoimmune process destroys the cells that manufacture it). Therefore, blood glucose can't get into the cells, and glucose blood levels rise.

In *Type 2 diabetes, or adult onset diabetes (AODM),* the pancreas produces less insulin than normal and the insulin receptors are less sensitive, or more resistant, to insulin. AODM is more related to poor diet and obesity than IDDM and patients can sometimes improve their condition by diet and exercise.

Symptoms: Polyuria (caused by kidney trying to filter out excessive sugar, which increases urine output), polydipsia (polyuria causes dehydration and therefore thirst), polyphagia (glucose can't enter cells effectively, causing hunger to increase energy input), weight loss (body breaks down muscle and fat to provide energy to starved cells), fatigue (glucose not optimally being processed, leading to fatigue).

Diagnosis: Fasting blood glucose > 125 on at least two occasions; symptoms plus a random blood glucose >199

Other lab tests: glycosylated Hb (hb A1c) above 7% (measure of average glucose level over past 2-3 months; percentage of Hb molecules with glucose attached); urinalysis with acetone; diabetic retinopathy on eye exam.

Diabetic ketoacidosis (DKA): High levels of glucose cause diuresis and severe dehydration; in addition, cells start metabolizing fat for energy, converting it into fatty acids, which get converted into ketones, which in turn causes acidosis.

Long term complications: When the bloodstream is super-concentrated with glucose, the blood becomes stickier and more viscous and binds to proteins in vessel walls, causing vessels to stiffen. This decreases circulation to vital organs, causing the complications such as heart disease, stroke, kidney damage, blindness, nerve damage, problems with wound healing.

Treatment

Diet: The ADA diet: 45% carbs, 15-20% proteins, no more than 20% fats.

Exercise: helps body use insulin.

Metformin increases sensitivity to insulin and decreases the amount of sugar released by the liver into the bloodstream.

Sulfonylureas like glyburide and glipizide stimulate beta cells to make insulin. You're supposed to avoid alcohol when on these drugs because the combination can cause hypoglycemia.

Meglitinides. Repaglinide. Stimulate beta cells to make insulin.

Insulin. There are four different types of insulin: Rapid acting (eg, Humalog (Lispro) insulin), short acting (eg, insulin regular), intermediate acting (eg, insulin NPH), and long acting (eg, Lantus).

Illustrative insulin sliding scale protocol:

Blood Glucose	**Regular Insulin dose**
Less than 70	OJ, hypoglycemia protocol*
70-150	0 units
150-200	2 units (0 if at bedtime)
201-250	4 units (2 if at bedtime)
251-300	5-6 units (3 if at bedtime)
301-350	6-8 units (4 if at bedtime)
351-400	7-10 units (5 if at bedtime)
>400	8 -12 units and call MD (6 if at bedtime)

Doses may be higher, depending on a patient's suspected insulin sensitivity

*In case of hypoglycemia (light-headedness, sweatiness, and clammy palms), a typical protocol is to immediately give a cup of juice, a tablespoon or two of sugar, or lifesavers, and to recheck blood sugar after 15 minutes. Once normalized, patients are often given a more complex carbohydrate, such as graham crackers or regular saltine crackers to tide them over until the next regular meal.

Psychiatric aspects

Avoid triggering or worsening diabetes with antipsychotics. Highest risk: olanzapine and clozapine; intermediate risk: quetiapine and risperidone.

Discuss psychological issues: Difficulty accepting diagnosis; fear of hypoglycemia; fear of complications; difficulties with adherence to treatment and self-care.

Depression and anxiety: Some psych meds can treat both psychiatric issues and diabetic neuropathy, eg., duloxetine, amitriptyline, nortriptyline, gabapentin

Substance users: Drinking impairs management of diabetes, whether via lifestyle alterations or medication compliance. Therefore, in patients who have comorbid DM and substance use, you can use the DM as leverage point to increase motivation to stop using substances.

Insulin overdose: Among diabetics with psychiatric disorders, an insulin overdose is a common type of suicide attempt. Such patients will be treated initially in the ICU. They will usually be hypoglycemic, sometimes severely so (less than 50 mg/dl) and will often receive a bag of IV "D5W", which means saline with 50% dextrose. One of the common dramatic symptoms of hypoglycemia is a seizure. They will be observed for a couple of days to make sure they are stabilized, and then may be transferred to psych, where you will then have an endocrinologist or hospitalist see the patient daily and make any required adjustments in their insulin dose.