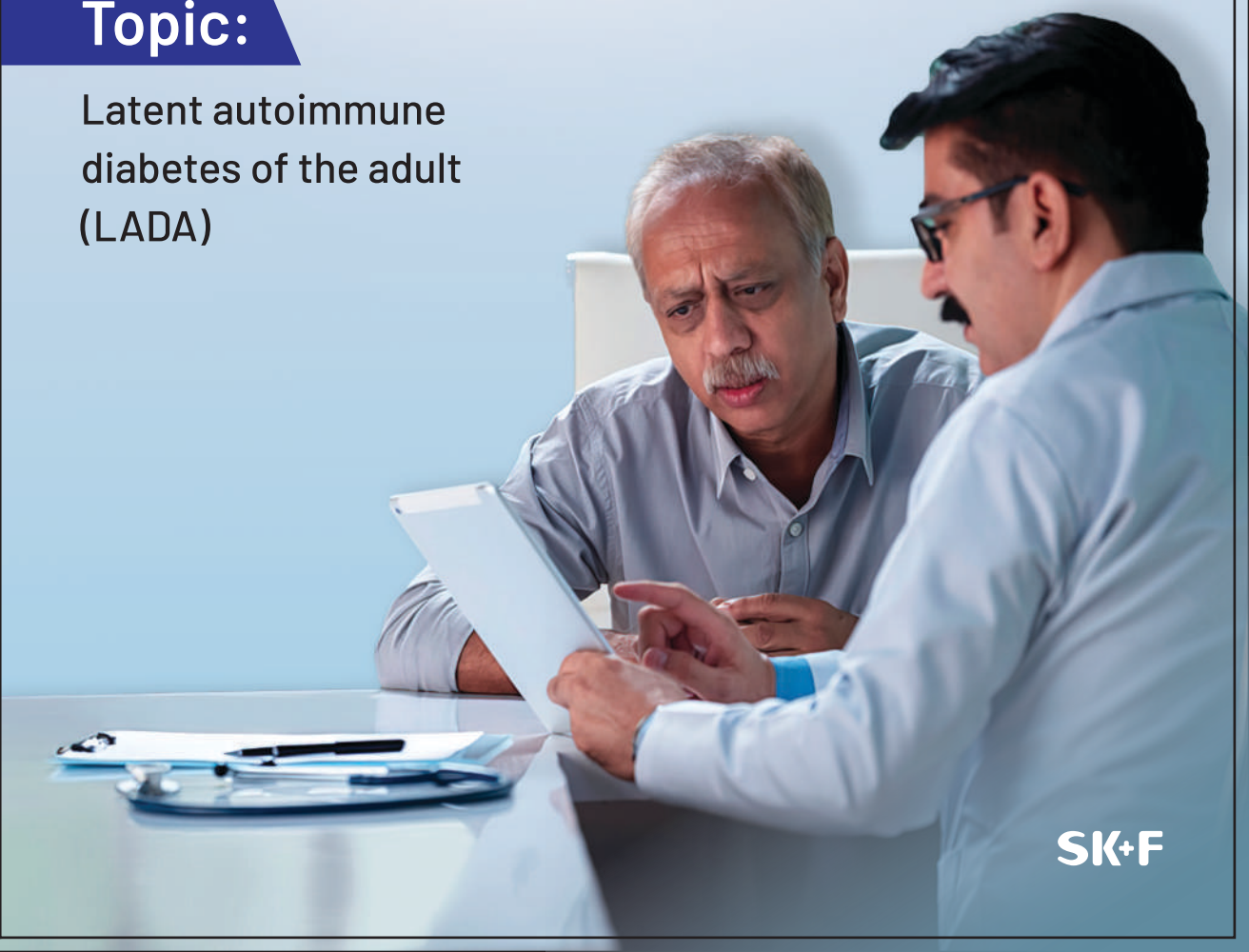
Solbion® presents

DISEASE Diary

Topic:

Latent autoimmune diabetes of the adult (LADA)



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Case Presentation

Three years ago, a 48-year-old female patient was diagnosed with her diabetes as part of an anemia evaluation. She has been taking oral medications ever since. She takes metformin 1000 mg twice daily (bid), pioglitazone 30 mg daily, and glipizide 5 mg bid. She reports that the medications worked at first but they no longer seem to work. Her morning glucose readings vary between 130 and 180 mg/dL, but rise steeply to 200–300 mg/dL anytime she eats. She has stopped eating carbohydrates to limit this.

She has a past medical history of Hashimoto's thyroiditis but denies a family history of any diabetes-related conditions. Her mother and sister both also had thyroid problems.

On physical exam, she has a body mass index (BMI) of 23 kg/m^2, blood pressure 123/78 mmHg, respiratory rate 16 breaths per minute, and pulse 72 beats per minute. She is in no acute distress and has no signs of insulin resistance. The rest of her exam is normal, including her thyroid.

Today, her hemoglobin A1c (HbA1c) is 8.6% and her random glucose is 266 mg/dL (she had some juice at lunch).

Question 1. What type of diabetes does she most likely have?

1. Type 1 diabetes
2. Type 2 diabetes
3. Latent autoimmune diabetes of the adult (LADA)
4. Monogenic diabetes/mature onset diabetes of youth (MODY)
5. Secondary diabetes

Question 2. What laboratory tests would you like to order to determine her diabetes type?

1. Oral glucose tolerance
2. C-peptide and glucose
3. Glutamic acid decarboxylase (GAD) and islet cell autoantibodies
4. Lipid panel

Answer:
Question 1 - 3

Answer:
Question 2 - 2 & 3

Case discussion

This patient has a number of unique features. She was diagnosed with diabetes at 45 years of age by a routine laboratory test. This would commonly make you think that she has type 2 diabetes. However, she is not overweight or obese, and she has no family history of diabetes, all of which is unusual in type 2 diabetes. She is also very sensitive to the intake of carbohydrates, with "skyrocketing sugars" after eating. The best laboratory tests to determine what type of diabetes the patient has include a measure of endogenous insulin production (C-peptide coupled with a glucose test) and a measure of diabetes-related autoimmunity (GAD and islet cell autoantibodies).

On the patient's laboratory results, her comprehensive metabolic profile was normal, other than a high glucose of 220 mg/dL. Her lipids were unusual for a person with type 2 diabetes: Total cholesterol 168 mg/dL, high-density lipoproteins 68 mg/dL, low-density lipoproteins 90 mg/dL, and triglycerides 82 mg/dL. Her C-peptide was low despite a glucose of 220 mg/dL. Both her GAD and islet cell autoantibodies were strongly positive.

So in summary, this patient had a diagnosis of diabetes in middle age, was not overweight or obese, had no family history of diabetes, but she did have a family and personal history of autoimmunity. She had a normal lipid panel and beta cell failure (as measured by a low C-peptide) and antibodies associated with type 1 diabetes.

She has a form of type 1 diabetes termed latent autoimmune diabetes of the adult or LADA. This form of diabetes typically occurs in middle age (ages 35–50 years) and is less likely to present at diagnosis with the polys and weight loss (albeit many patients will have had an episode prior to diagnosis). This diagnosis is important as the patient really should be treated with insulin and not oral agents.

LADA may be easy to miss. There are as many people with LADA as there are with traditional type 1 diabetes. A study has demonstrated that the model outlined below was able to predict LADA.

The five features of this model are:

- aged less than 50 years;
- classic poly symptoms;
- BMI <25 kg/m2;
- a personal history of autoimmunity; and
- a family history of autoimmunity.

If patient has more than two of the features listed above, then the study demonstrated that there was a 90% sensitivity and 71% specificity for the diagnosis of LADA. However, if they had only one or no features, then there was 99% negative predictive value against LADA.

Conclusion

Type 1 diabetes can present in middle age and may present as a slowly progressive autoimmune process. If a patient does not look like they have type 2 diabetes, does not have a family history of diabetes, or has an autoimmune history then you should consider a diagnosis of LADA. There are as many people with LADA as there are with type 1 diabetes, so we are missing this diagnosis. As with any form of type 1 diabetes, the treatment for LADA is insulin.

Ref: Data on File