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Visual Vignette

Skin Rash Appearing in a Patient with Gestational Diabetes Mellitus on Insulin Therapy

Ayano Tsukagoshi-Yamaguchi, MD, PhD [1], Takahiro Ishikawa, MD, PhD [2, 3, 4, *], Masatsune Ogura, MD, PhD [5]

[1] *Department of Endocrinology, Hematology, and Gerontology, Chiba University Graduate School of Medicine, Chiba, Japan*
[2] *Department of General Medical Science, Chiba University Graduate School of Medicine, Chiba, Japan*
[3] *Department of Metabolism and Endocrinology, Eastern Chiba Medical Center, Chiba, Japan*
[4] *Geriatric Medical Center, Chiba University Hospital, Chiba, Japan*
[5] *Department of Clinical Laboratory Technology, Faculty of Medical Science, Juntendo University, Tokyo, Japan*

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Case Presentation

A 39-year-old woman, healthy by nature, was diagnosed with gestational diabetes mellitus (GDM) at 27 weeks of pregnancy. Despite dietary modifications and self-monitoring of blood glucose, glucose control was inadequate. Therefore, treatment with insulin detemir and insulin lispro injections was initiated at 30 weeks of gestation. A few days after this, erythema and induration with pruritus appeared at the abdominal puncture site and, 3 weeks later, spread on the bilateral lower legs (Fig. *A* and *B*). In the blood tests, the total immunoglobulin E (IgE) level was 25.8 IU/mL (reference value, <360 IU/mL), which was not significantly increased. However, the nonspecific insulin antibody and human insulin-specific IgE titration levels were 10.1 U/mL (reference value, <0.4 U/mL) and 1.19 UA/mL (fluorescence enzyme immunoassay method; reference value, <0.35 UA/mL), respectively, which were both high. Because switching from lispro to aspart did not improve symptoms, insulin detemir was changed to neutral protamine Hagedorn. Antihistamines were not used because of her refusal. The skin rash disappeared approximately 1 week after the change to neutral protamine Hagedorn, and the infant was delivered by cesarean delivery at 39 weeks of gestation. Her blood glucose levels improved promptly after delivery, and insulin therapy was terminated.

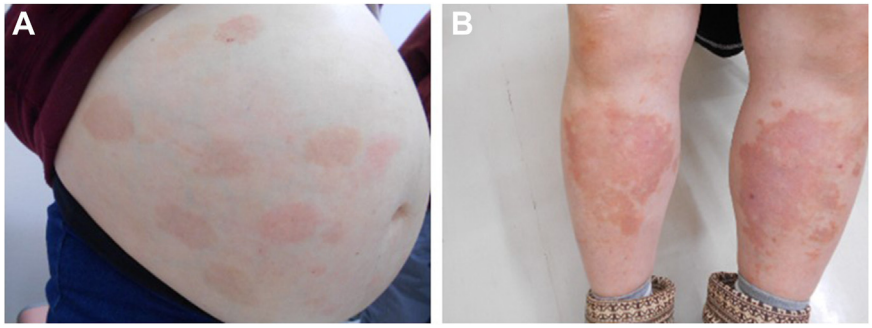

Fig. Photograph of the patient showing erythematous, brown papules on the abdomen (*A*) and bilateral lower legs (*B*).

Abbreviations: GDM, gestational diabetes mellitus; IgE, immunoglobulin E.

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* Address correspondence to Dr Takahiro Ishikawa, Department of General Medical Science, Chiba University Graduate School of Medicine, 1-8-1 Inohana, Chuo-ku, Chiba City, Chiba 260-8677, Japan.
E-mail address: tak.ishikawa.vla@chiba-u.jp (T. Ishikawa).

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What is the diagnosis?

Answer

She was diagnosed with insulin allergy. Most insulin allergy is explained by an IgE-mediated type I allergy mechanism. Its frequency is relatively low: 0.1% to 3% of patients with diabetes receiving insulin therapy.[1] Insulin allergy in GDM is extremely rare due to immune tolerance occurring during pregnancy.[2] To our knowledge, there have only been approximately 10 cases so far. Insulin allergy rarely causes anaphylaxis, which has not been reported in GDM possibly due to immune tolerance. The causative agents of the allergy are thought to be insulin itself and the preservatives added to insulin, including zinc, protamine, and metacresol.[1] It has been reported that the mean total IgE level is higher in GDM than in uncomplicated pregnancy,[3] which may have triggered the present insulin allergy. In the present case, both levels of nonspecific insulin antibodies and human insulin-specific IgE increased, leading to the diagnosis of insulin allergy. There are various treatments for allergic reactions to insulin.[1] Antihistamines and corticosteroids are used to relieve symptoms. It is also important to change the insulin to another type. In addition, subcutaneous insulin desensitization therapy may be considered in some cases.[1] Oral hypoglycemic agents, such as metformin, are available for GDM in only some countries, and insulin treatment is generally chosen. Therefore, for maternal and fetal safety, insulin allergy in patients with GDM should be promptly diagnosed from precise visual examination and testing.

Disclosure

The authors have no conflicts of interest to disclose.

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