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Allergy to Insulin Glargine: A Case Report

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1. Abstract

Insulin allergy is a rare complication of insulin therapy, occurring in fewer than 1% of diabetic patients. Reactions are usually local, while systemic hypersensitivity is uncommon. We report a 12-year-old girl with newly diagnosed type 1 diabetes who developed a generalized pruritic erythematous rash shortly after initiation of insulin glargine. She tolerated other insulin preparations without adverse effects. Symptoms resolved completely after discontinuation of glargine and substitution with Neutral Protamine Hagedorn (NPH) insulin. Re-exposure to glargine reproduced the reaction. To our knowledge, this is the first reported case of selective allergy to insulin glargine with tolerance to other insulin types in the English literature.

2. Keywords

insulin allergy, insulin glargine, type 1 diabetes, hypersensitivity

3. Introduction

With the introduction of recombinant human insulin and insulin analogues, allergic reactions have become rare, occurring in less than 1% of patients. When present, insulin allergy may manifest as localized injection-site reactions or, less commonly, systemic reactions including urticaria and anaphylaxis.

Hypersensitivity may be directed against the insulin molecule itself or against additives such as protamine, zinc, or preservatives used in insulin formulations. Management is often challenging and includes antihistamines, switching insulin preparations, desensitization protocols, or rarely immunotherapy.

Insulin glargine is a long-acting insulin analogue widely used for basal glucose control in type 1 diabetes. It is generally considered less immunogenic than older insulin formulations. However, rare allergic reactions have been reported. We describe a case of selective hypersensitivity to insulin glargine with successful management by switching insulin type.

4. Case Report

A 12-year-old girl was admitted with diabetic ketoacidosis and newly diagnosed type 1 diabetes mellitus. She was initially treated with intravenous fluids and insulin infusion, followed by transition to subcutaneous insulin therapy using regular insulin and Neutral Protamine Hagedorn (NPH) insulin.

After stabilization, her regimen was changed to a basal-bolus protocol consisting of insulin aspart before meals and insulin glargine at bedtime to improve glycemic control.

4.1. Clinical Course

Three days after initiation of insulin glargine, the patient developed:

- Generalized erythematous pinpoint rash
- Severe pruritus
- No fever, arthralgia, or systemic symptoms

Despite symptoms, she continued insulin therapy until reassessment one week later.

4.2. Examination

On presentation to clinic, she had a diffuse erythematous rash involving the trunk and extremities. Vital signs were stable, and there was no evidence of infection or systemic illness.

4.3. Investigations

Skin-prick testing and insulin-specific IgE/IgG assays were not performed due to limited availability in our setting. However, the temporal relationship between insulin glargine administration and symptom onset strongly suggested insulin allergy.

4.4. Management

Insulin glargine was discontinued and replaced with NPH insulin twice daily. Insulin aspart was continued before meals. Antihistamines were prescribed for symptomatic relief of pruritus.

4.5. Outcome

Within one week, the rash and itching resolved completely. The patient tolerated the new insulin regimen well, with no recurrence of symptoms during 11 months of follow-up.

A subsequent re-challenge with insulin glargine due to glycemic management issues resulted in recurrence of the same generalized pruritic rash, confirming the diagnosis of insulin glargine allergy.

5. Discussion

Insulin allergy is uncommon in modern clinical practice but remains clinically relevant. Reactions may result from the insulin molecule itself or from excipients such as protamine, zinc, or preservatives.

Long-acting insulin analogues such as insulin glargine and insulin detemir were developed to reduce immunogenicity and improve basal insulin coverage. However, allergic reactions, although rare, can still occur.

Previously reported cases of insulin glargine hypersensitivity have mainly described:

- Local injection-site reactions

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- Systemic reactions in patients reacting to multiple insulin types
- Older adult patients with type 2 diabetes

The present case is unique in several respects:

1. Selective allergy to insulin glargine only
2. Tolerance to other insulin types (NPH and aspart)
3. Generalized cutaneous reaction rather than localized site reaction
4. Reproducibility of symptoms on rechallenge

The mechanism of insulin allergy remains unclear but is thought to involve IgE-mediated hypersensitivity or immune responses to formulation components. Structural differences between insulin analogues may explain variability in immunogenicity among different preparations.

Management depends on severity and includes antihistamines, switching insulin formulations, desensitization protocols, and in refractory cases, biologic therapy such as omalizumab or pancreatic transplantation.

This case demonstrates that switching insulin type can be a simple, safe, and effective strategy in patients with suspected insulin allergy, particularly in resource-limited settings where immunological testing is unavailable.

6. Conclusion

Insulin allergy, although rare, should be considered in patients developing cutaneous reactions after initiation of insulin therapy. This case highlights a rare selective hypersensitivity to insulin glargine with tolerance to other insulin formulations. Discontinuation and substitution with an alternative insulin led to complete resolution of symptoms. Clinicians should be aware that switching insulin preparations may be an effective first-line management strategy in suspected insulin allergy.

References

1. Arkins JA, Engbring NH, Lennon EJ. The incidence of skin reactivity to insulin in diabetic patients. J Allergy 1962;33:69-72.
2. Lieberman P, Patterson R, Metz R, Ucena G. Allergic reactions to insulin. JAMA 1971;215(7):1106-1112.
3. Bollinger ME, Hamilton RG, Wood RA. Protamine allergy as a complication of insulin hypersensitivity: A case report. J Allergy Clin Immunol 1999;104(2 Pt 1):462-465.
4. Radermecker RP, Scheen AJ. Allergy reactions to in-sulin: effects of continuous subcutaneous insulin infu-sion and insulin analogues. Diabetes Metab Res Rev 2007;23(5):348-355.
5. Yong PF, Malik R, Arif S, Peakman M, Amiel S, Ibrahim MA, Gough A. Rituximab and omalizumab in severe, refractory insulin allergy. N Engl J Med 2009;360(10):1045-1047.