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Brief report

Insulin glulisine in the treatment of allergy to rapid acting insulin and its rapid acting analogs

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ABSTRACT

This is a case report of a patient with allergy to the rapid acting insulins and rapid acting analogs. Before trying insulin desensitization the treatment was changed to a basal-bolus regimen with glargine and glulisine with no signs of insulin allergy during the months after the start of the treatment.

1. Introduction

Systemic insulin allergy is a rare condition and has usually been reported in adults [1,2]. The human insulin analogs, lispro and aspart, have been proposed for the treatment of insulin allergy [3,4]. However there have been also described cases of allergy to these analogs [5]. Here we present the case of a man who showed insulin allergy to the rapid acting insulin and its rapid acting analogs which was resolved after changing the treatment to the newest rapid acting analog, insulin glulisine. To our knowledge, this is one of the first cases reported of a successful treatment of insulin allergy with the new rapid acting analog glulisine.

2. Case report

A 70-year-old male patient was referred to the Endocrinology Department due to allergy to the rapid acting insulins and rapid acting analogs with a bad control of his diabetes mellitus.

The patient had a history of allergy to penicillin an its derivates and a type 2 diabetes mellitus for which he required insulin since 20 years ago.

In the beginning the patient was receiving treatment with NPH insulin and metformin. In order to achieve a better control the treatment was changed 3 years ago to premixed aspart and NPH insulin. When the change was made, the patient started to show skin rash, flare and pruritus in the site

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of injection of the aspart insulin, although he had followed correctly the advise of changing the needle and injection site. As the symptoms did not resolve, the treatment was changed 2 months later to premixed lispro and NPL insulin. The patient showed again the same symptoms with this new treatment in the site of injection of the lispro insulin, so 2 weeks later the treatment was once more replaced, this time for premixed NPH and regular insulin.

Once again, the patient referred the allergy symptoms which, although attenuated if compared to the previous symptoms, they still were annoying to the patient, so the treatment was finally changed to the previous treatment with NPH and metformin, and repaglinide was added.

Despite this treatment the glycemic controls did not improve, with HbA1c levels around 8%, probably due to pancreatic exhaustion, and he was then referred to our Endocrinology Department.

After the first assessment and after confirming the bad glycemic control (HbA1c 7.5%) the treatment was changed to a basal-bolus regimen before trying insulin desensitization. The patient received glargine as basal insulin and the new analog glulisine as rapid acting insulin, because he had showed allergy to the other rapid acting insulins.

The tolerance to the new treatment was excellent, with no signs of insulin allergy during the months after the start of the treatment. The controls showed an improvement (HbA1c 7%), as it could be expected of a basal-bolus regimen.

3. Discussion

Insulin allergy is a rare condition, but there are several cases reported of allergy not only to the rapid acting insulin, but also to the rapid acting analogs, aspart and lispro.

In our case, such as in others previously reported [6], we did not perform the tests for insulin-specific IgE and IgG, because the clinical profile with skin rash, induration, pruritus, and burning sensation was explicit enough to consider the diagnosis. Interestingly, the patient had a personal history of allergy to penicillin as well which is a condition with a high prevalence in the patients with allergy to insulin [7].

The treatment for insulin allergy can consist of symptomatic therapy with antihistamines, change of insulin preparation and, in case of multiple sensitizations, an insulin desensitization may be required. The insulin desensitization can be performed either with continuous subcutaneous insulin infusion [8] or with specific immunotherapy consisting of successive subcutaneous injections of insulin [1]. The inmunotherapy has been combined with prednisolone in severe cases [5].

In our case, due to the recent development of a new rapid acting analog, and due to its simplicity, we decided to test the response to a new insulin such as glulisine before trying insulin desensitization, with excellent results.

Although insulin glulisine does not have zinc as a part of its composition, we did not think it could be a case of allergy to the zinc that is part of the other rapid acting insulins because the patient did not show allergy to the injection site of glargine, which has zinc as a part of its composition.

In conclusion, this is an unusual case of allergy to the rapid acting insulins which improved after changing the treatment to a new rapid acting analog. The development of new insulin analogs can offer to the endocrinologist a wider range of treatment choices in case the patient shows insulin allergy.

Conflict of interest

There are no conflict of interest.

REFERENCES

[1] L. Heinzerling, K. Raile, H. Rochlitz, T. Zuberbier, M. Worm, Insulin allergy: clinical manifestations and management strategies, Allergy 63 (2008) 148–155.
[2] S. Ghosh, V. McCann, L. Bartle, A. Collier, I. Malik, Allergy to insulin detemir, Diabet. Med. 24 (2007) 1307.
[3] L. Airaghi, M. Lorini, A. Tedeschi, The insulin analog aspart: a safe alternative in insulin allergy, Diabetes Care 24 (2001) 2000.
[4] M.R. Abraham, B.A. al-Sharafi, G.A. Saavedra, R. Khardori, Lispro in the treatment of insulin allergy, Diabetes Care 22 (1999) 1916–1917.
[5] H. Yokoyama, S. Fukumoto, H. Koyama, M. Emoto, Y. Kitagawa, Y. Nishizawa, Insulin allergy; desensitization with crystalline zinc–insulin and steroid tapering, Diabetes Res. Clin. Pract. 61 (2003) 161–166.
[6] P. Darmon, V. Castera, M.C. Koeppel, C. Petitjean, A. Dutour, Type III allergy to insulin detemir, Diabetes Care 28 (2005) 2980.
[7] B.V. Jegasothy, Allergic reactions to insulin, Int. J. Dermatol. 19 (1980) 139–141.
[8] R.P. Radermecker, A.J. Scheen, Allergy reactions to insulin: effects of continuous subcutaneous insulin infusion and insulin analogues, Diabetes Metab. Res. Rev. 23 (2007) 348–355.