

# Spotted Dermopathy in a Diabetic Patient due to Insulin Allergy

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## Abstract

A rare case of diabetic patient who developed multiple cutaneous hyperpigmented spots following bovine isophane (NPH) insulin injection is described here. ©

## INTRODUCTION

Cutaneous allergic reactions to insulin have been described.<sup>1</sup> Besides insulin molecule itself, the antigen responsible for inciting such local reactions may be an additive such as protamine<sup>3</sup> or zinc.<sup>4</sup> We describe herein a patient who developed multiple cutaneous hyperpigmented spots following bovine isophane (NPH) insulin injection. Intradermal testing suggested that cellular immunity against protamine antigen of insulin preparation played a role in the pathogenesis of this local reaction.

## CASE REPORT

A 30 years diabetic patient presented in medical outdoor with multiple, painful, and itchy hyperpigmented spots. Lesions were characteristically present at each site of insulin injection and involved whole of anterior surface of abdomen, both thighs and lower legs. He was a known case of type 2 diabetes since eight months and was using injection Bovine Isophane (NPH) insulin. About four months after initiation of insulin therapy he noticed painful, erythematous, pruritic papular and nodular lesions at injection site developing approximately 24 hours after injection. These lesions persisted for about two weeks and then healed leaving hyperpigmentation. There was no personal history of allergy to any food /drug/inhalant nor any family history of urticaria. No error was found on insulin injection technique.

General physical examination including vital parameters were normal. No abnormality was detected on systemic examination. Cutaneous examination revealed multiple hyperpigmented macular lesions about 1-2 cms in size and a few tender, indurated papules and nodules 0.5-1 cm in size

distributed over the anterior surface of abdomen (Fig. 1), anterior and medial aspect of both thighs and calf muscles (Fig. 2).

Laboratory investigations revealed: Hb-11gm/dl, TLC-10,500 cells/cumm, DLC-  $P_{76}L_{20}E_1M_3B_0$ , ESR - 50mm 1st hr, blood glucose (fasting) - 82mg%, and post-prandial -112mg% blood urea - 22mg%, and serum creatinine 1.2mg%. His glycosylated haemoglobin (HbA<sub>1c</sub>) was 7%. Liver function test, serum uric acid, antinuclear antibody titre, C-reactive protein and rheumatoid factor values were within normal limits. A punch biopsy sample from one of the papule revealed perivascular lymphocytic infiltration in the upper dermis. There was no granuloma or foreign substance. Intradermal skin test was then carried out with 1 unit of commercially available Bovine Isophane (NPH) insulin. Delayed hypersensitive reaction in the form of erythema, pruritus, induration with papulation occurred about 24 hours following injection of isophane suspension. No cutaneous reaction was associated with regular bovine insulin preparation.

## DISCUSSION

Cutaneous allergic reactions to insulin have been described.<sup>1</sup> Though frequency of such local cutaneous reactions have declined with the advent of monocomponent purified insulin,<sup>2</sup> occasional cases have occurred due to allergy to additive such as protamine<sup>3</sup> or zinc<sup>4</sup> present in commercial insulin preparation. Such allergic cutaneous reaction may be, immediate local starting as pruritus, erythema which turns urticarial within 30 minutes and then subsides within an hour. They are probably IgE mediated.<sup>5</sup> Delayed hypersensitive skin reaction occurs approximately two weeks after initiation of insulin therapy in which an itchy nodule appear in 1-2 days at the site of injection with peak in intensity at 48 hours. It lasts for days and then heals with scarring and hyperpigmentation.<sup>6</sup> Management of such diabetic patients with severe cutaneous allergic reactions to insulin preparation involves immediate switching to human insulin-regular, as we did in above reported case.

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Fig. 1



Fig. 2

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