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A Case of Hypersensitivity to Gelafundin

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ABSTRACT

We report a case of cardiovascular collapse after gelafundin infusion, a commonly used colloid. Risk factors for such a reaction and suggested alternative are reviewed. Awareness of this reaction is highlighted in view of its increasing popularity.

Keywords: gelafundin, hypersensitivity, allergy, cardiovascular collapse

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INTRODUCTION

Although it is recognised that colloids carry a risk of "allergic reactions", the incidence of severe reactions to gelafundin is low (0.038%)[1]. We report a case of shock occurring after gelafundin infusion requiring aggressive intervention and resuscitation.

CASE REPORT

The patient was a 46-year-old IDDM scheduled for wound desloughing of an infected left foot. He had a past history of knee amputation under spinal anaesthesia with Marcain 0.5% and a known allergy to penicillin, seafood and soap.

Spinal anaesthesia was administered using 2.0 ml 0.5% normobaric Marcain. Haemodynamic parameters were stable till 1/2 hour after the initiation of the block when systolic blood pressure dropped to 90 mmHg. Since Hartman's solution had been completed, a pint of gelafundin was started. Within minutes, the patient complained of pruritus along the drip site. No rash or urticaria was visible but gelafundin was stopped immediately. The patient became restless, had copious oral secretions and complained of dyspnoea. He quickly lost consciousness and was bradycardic with systolic blood pressure falling to 65 mmHg. Resuscitation commenced immediately with endotracheal intubation , mechanical ventilation and rapid infusion of Hartman's solution and Haesteril 6%. 1 ml boluses of adrenaline at 1:10000 and 2 doses of atropine 0.6 mg were administered to maintain blood pressure. The patient was transferred to the ICU for ventilation and required inotropic support.

Blood investigations sent showed a normal C3/4 level but a markedly raised total IgE level of 1600 i.u./ml. The patient stabilized after 8 hours with no resulting neurological or cardiac sequelae and was subsequently discharged.

DISCUSSION

The sequence of events following so closely after gelafundin was infused strongly indicates an anaphylactic reaction. In the literature, 2 cases of anaphylactic shock accountable to Plasmion, a gelatin plasma substitute have been reported[2].

A study by Laxenaire[3] alludes to risk factors predisposing to gelafundin hypersensitivity and 2 risk factors present in this patient include a history of drug allergy (odds ratio : 3.16) and being male (odds ratio : 1.98).

Previously, histamine has been cited as the principal mediator of anaphylactoid reactions in urea-linked gelatins and polygeline. However, a type I hypersensitivity reaction with Ig E antibodies to gelatin has been demonstrated in a female who exhibited cross-reactivity between gelatin and fruit gums[4] and patients who developed vaccine-related reactions[5]. It has even been recommended that gelatins be avoided in patients with a known history of drug allergy and when a reaction does occur, specific antibodies must be tested for[3].

When anaphylaxis due to a colloid occurs, a dilemma arises in resuscitation. Fisher advocates the use of adrenaline as the drug of first choice and colloids over crystalloids for resuscitation[6]. Hydroxyethy starch (HES) was used effectively in resuscitation here. Although the frequency of anaphylactic reactions with HES varies between 0.058%[3] - 0.085%[1] it may be a prudent choice especially in the hypersensitive individual. There have been reports of a histamine-independent pruritus occurring after HES infusion but the incidence of pruritus is not related to coincidental atopic disease or older age but rather to the cumulative dosage and type of HES given[7].

HES specific antibodies are extremely rare[8] and they do not necessarily induce anaphylaxis due to it

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having a chemical structure being similar to glycogen which is omnipresent in human cells.

In conclusion, gelatins are useful volume substitutes but carry a risk of allergic reactions. In view of this, its routine use for resuscitation, volume replacement, preloading before central axis neural blockade or haemodilution for peri-operative autologous blood transfusion should be cautioned especially in the atopic individual or one with previous drug allergies. It is ironic that a gelatin substitute is often used for volume resuscitation or replacement and yet, will be detrimental to the patient should an added insult of anaphylaxis occur. Here, sympathetic blockade from the spinal block resulted in a reaction that was refractory to treatment and required early use of adrenaline for resuscitation. Hydroxyethyl starch is considered a "safer" alternative and its use can also be extended to resuscitation in anaphylaxis.

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