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Case Report

Unexpected Anaphylaxis Reaction to Intravenous Methylprednisolone

Abstract

Despite the widespread use of corticosteroids in children, hypersensitivity reactions to corticosteroids are rarely. However, life-threatening reactions have been described, and clinicians should be aware of the risk posed by potential allergy to corticosteroid. Parenteral administration of such corticosteroids as methylprednisolone and hydrocortisone is more commonly associated with severe hypersensitivity reactions than other routes. A close and detailed evaluation is required to confirm the presence of a true hypersensitivity reaction to the suspected drug, and a challenge test with a different steroid must be performed in order to offer a safe alternative for further treatments. We report the case of a 14-year-old boy with an adverse reaction caused by methylprednisolone.

Introduction

Although severe allergic reactions have been reported following administration of corticosteroids, their frequency in children is limited, given the widespread use of these drugs in pediatric [1,2]. Corticosteroids are practically indispensable for the treatment or control of certain diseases in childhood, so it is a priority to conducting appropriate and accurate diagnosis of allergy. We report the case of a teenager with a severe anaphylactic reaction following administration of methylprednisolone sodium hemisuccinate (Urbason® powder and solvent for solution for injection).

Clinical case

Patient of 14 years who, in the context of an orbital abscess secondary to acute sinusitis, received a dose of intravenous methylprednisolone, and after administration immediately presented a picture of dry cough and breathlessness. On physical examination the patient had pale skin and perioral cyanosis, and pulmonary auscultation a generalized decrease in air intake and expiratory wheezing was observed. Furthermore, tachypnea of 50 rpm and a decrease in oxygen saturation to 80% was found. Oxygen therapy was started and, suspecting a possible severe adverse drug reaction, adrenaline intramuscular, intravenous and nebulized salbutamol and dexchlorfeniramine administered with progressive resolution of the picture.

Among the personal history, the patient reported that he had previously received topical corticosteroids (skin and nasal), due to the appearance of eczema and rhinoconjunctivitis symptoms in the spring. He had never shown symptoms of asthma. He had no family history of drug allergy.

Once in the office, a skin test was performed with the battery of corticosteroids available (methylprednisolone, hydrocortisone, dexamethasone, budesonide, betamethasone and triamcinolone), and only positive for methylprednisolone was obtained. The preparation of methylprednisolone with the skin test was performed was the same as that produced adverse reaction (hemisuccinato

methylprednisolone). Subsequently, by a provocation test, patient tolerance was found to corticosteroids from other groups, specifically dexamethasone and deflazacort (groups B and C, respectively), with the aim of providing a pharmacological alternative that might be required in the future. Given the frequency of allergic cross-reactions between corticosteroids in the same group described in the literature, the moment the patient was advised to avoid, in addition to the implicated drug (methylprednisolone), the rest of corticosteroids group A.

A controlled provocation was not performed due to the severity of the previous reaction and negativity of the provocations with suitable alternatives, as has been the norm in previous cases reported in the literature.

Discussion

The incidence of allergic to steroids described in pediatrics reactions is low, given its widespread use in childhood [1,2]. Delayed hypersensitivity reactions are most common (estimated prevalence of 0.5-5%), and allergic contact dermatitis is the most commonly observed. They have also been described, although less frequently, immediate adverse reactions after systemic administration of corticosteroids. Although there are no large epidemiological studies, published cases can be deduced that such reactions occur very infrequently. However, in a study of children with rheumatoid arthritis treated with high doses of intravenous corticosteroids, an incidence of anaphylaxis of 0.5% it was observed [3,4].

The route of administration most often induce adverse reactions is parenteral, and most commonly implicated drugs are methylprednisolone and hydrocortisone, although reactions have also been reported with other corticosteroids. Adverse reactions following administration of corticosteroids systemically usually immediate and widespread, with varied clinical manifestations, from mild symptoms such as itching, hives or angioedema, to severe reactions such as bronchospasm or anaphylaxis, as in the case presented here. Generally they occur more frequently in patients who have previously received treatment with corticosteroids [5,6]. The presence of specific positive skin tests suggest an immunologic

mechanism hypersensitivity mediated by IgE [7]. Generally, for such testing commercial preparations available are used with concentrations described in the literature [1]. If it is negative, it must be valued challenge test or exposure.

In this case, as in most of the published literature, we cannot say with certainty that the study drug is responsible for the adverse reaction, since given the seriousness of the previous reaction was not performed provocation, and has opted for indirect way to find a safe alternative. Corticosteroids are classified into 4 groups (Table 1), [5,6] and described the same cross between Group 4 reactions, so generally it is advisable to avoid all the group involved and check the tolerance (by exposure test) to a corticoid of another group, with the aim of offering the patient a treatment alternative [7]. Some authors question the existence of this cross-reaction, symptoms are not observed in the provocations with corticosteroids in the same group involved in the allergic reaction [8]. On this issue so controversial, it is noteworthy that described a case of positive provocation with methylprednisolone

hemisuccinate and refusal to methylprednisolone, which again goes against the hypothesis of cross-reaction.

Compared to those described against other drugs allergic reactions, allergy to corticosteroids still remains to be clarified, especially in children, and can be a difficult condition to recognize, since in many cases the symptoms can be mistaken for a worsening disease that were given these drugs [2]. Therefore, although it is a rare pediatric allergy, you should think of this possibility when suggestive of hypersensitivity reactions during corticosteroid administration or to a worsening of the disease for which they were prescribed arise. Although in our case the diagnosis was easy because the patient did not have prior to drug administration respiratory symptoms, at other times the diagnosis can be masked by the pathology itself for which have been prescribed steroids, and will be essential to maintain a high index of clinical suspicion to establish it.

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Table 1: Corticosteroids groups according to the chemical structure and reactivity in patch tests.

Group	Corticosteroids included in each group
A	Cortisone, cortisone acetate. Hydrocortisone, hydrocortisone acetate, hydrocortisone succinate. Fludrocortisone acetate. Fluorometholone. Fluprednisolone acetate. Meprednisone. Methylprednisolone, methylprednisolone acetate. Tixocortol pivalate. Prednisolone, prednisolone acetate. prednisone
B	Amcinonide. Budesonide. Deflazacort. Desonide. Flucinolone acetate. Flunisolide. Fluocinonide. Halcinonide. Parametasona acetate. Triamcinolone, triamcinolone acetate, triamcinolone diacetate, triamcinolone Alcohol
C	Betamethasone, betamethasone phosphate, betamethasone benzoate. Dexamethasone, dexamethasone phosphate, dexamethasone acetate, dexamethasone-21-isonicotinate. Desoximetasone. Fluocortolone pivalate, caproate fluocortolone. Fluprednidene acetate. Parametasona acetate
D	Aceclometasona dipropionate. Alclometasona dipropionate (D1). Beclomethasone dipropionate (D1). Betametasona dipropionate (D1), betamethasone-17-valerate (D1). Clobetasone-17-propionate (D1), clobetasone-17-butyrate (D1). Fluocortinbutil (carboxylate). Fluticasone-17-dipropionate (D1). Halobetasol. Hydrocortisone-17-butyrate (D2), hydrocortisone-17-valerate (D2). Methylprednisolone aceponate (D2). Mometasone furoate (D1). Prednicarbat (D2)