

## Localized Periorbital Edema as a Clinical Manifestation of Sulfite Sensitivity

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*Sulfite is commonly used in pharmaceuticals as a preservative. We report a unique clinical presentation of localized periorbital edema on the left eye after administration of sulfite-containing dexamethasone. The patient's sulfite sensitivity was confirmed by sulfite oral provocation test : periorbital edema on the same site developed after ingestion of 200mg sodium bisulfite. She was non-atopic and did not complain of any respiratory symptoms. Allergy skin prick test with 100 mg/ml sodium bisulfite showed a negative result. She also has aspirin-sensitive urticaria which was confirmed by oral provocation test. In conclusion, sulfite can induce a localized periorbital edema, an uncommon manifestation in sensitive patients. Further investigations are needed to clarify the pathogenetic mechanisms.*

**Key Words :** *Periorbital edema, Sulfite-sensitivity*

### INTRODUCTION

Sulfites have been used as anti-oxidants, color preservatives and as bacterial growth inhibitors in foods, beverages, and currently in pharmaceutical products (Stevenson and Simon, 1984). Sulfites in use include sulfite dioxide, sodium and potassium sulfites, bisulfites and metabisulfites. Exposure to these compounds in sensitive individuals has caused asthma, urticaria, angioedema, laryngeal edema, and anaphylaxis (Schwarz, 1983; Belchi-Hernandez et al., 1993). These reactions have appeared mainly in asthmatic patients who are usually chronic steroid dependent and are manifested by the sudden onset of bronchospasm. The case we present of sulfite sensitivity with localized periorbital edema, without asthma, is therefore unusual.

### CASE REPORT

A 53-year-old woman complained of a few episodes of periorbital edema localized on her left eye over the

previous 2 years. The first episode was noted several hours after applying eye drops 2 years ago. The episodes lasted for a few days and were improved by anti-histamine medications.

The patient had no history of rhino-conjunctivitis or lower respiratory symptoms. Routine study revealed normal sinus and chest radiographs with a negative result on methacholine bronchial challenge test, and normal eosinophil counts of 22/ul. Total IgE level was 35 IU/ml and skin prick tests showed negative response to 80 common inhalant allergens. During admission, when dexamethasone (5 mg/vial) including total metabisulfite 1 mg was administered intramuscularly twice to control her skin lesion, her periorbital edema and erythema became severer. Dexamethasone was stopped and her skin lesion was improved by anti-histamine and adrenergic medications.

#### Challenge study :

To identify the causative agents, a single blind aspirin oral challenge test was done according to a previously described method with the stopping of all the medication (Hong et al., 1989). Generalized urticaria especially in both upper and lower extremities developed 4 hours after the aspirin ingestion, which disappeared with anti-histamine medications. After two days of

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aspirin challenge study, a single blind oral challenge test with 200mg sodium bisulfite was administered. Twelve hours after the ingestion, the same periorbital erythematous edema developed in her left eye as shown in Fig. 1, which disappeared with anti-histamine medication.

#### Management :

We recommended avoidance of aspirin and sulfite-containing foods and drugs. She has not complained of any skin lesions during the 6 months of follow-up.

### DISCUSSION

Sulfite sensitivity is being recognized with increasing frequency. Sulfite could induce various symptoms as well as asthma. It is known that 4.8-13.6 % of all asthmatics have sulfite-sensitive asthmatic symptoms(Simon et al., 1981 ; Hong et al., 1989). Little is known about localized periorbital edema, as described in this study, a manifestation of sulfite-sensitivity.

The mechanism of these reactions is unclear. Possible hypotheses(Simon, 1986) suggested so far include : sulfite-oxidase deficiency ; secondary response to inhalation of sulfur oxide ; and less likely, IgE mediated reaction. Our patient developed erythematous edema, usually limited to her left periorbital area, after sulfite ingestion. Although this reaction was not life threatening, it demonstrated unique characteristics.

Concurrent aspirin sensitivity manifested as generalized urticaria was also noted. Several hypotheses about how aspirin ingestion can induce lipoxygenase pathway have been suggested(Stevenson and Lewis, 1987) : Shunting from cyclo-oxygenase pathway to lipoxygenase pathway ; viral infections; and less likely, IgE mediated reaction. There have been some cases of sulfite-sensitive asthmatics who had concurrent sensitivity to aspirin(Hong et al., 1989), like our patient, but the possibility of cross-reactivity between them seems very low.

It is well known that complete avoidance of sulfite-containing foods and drugs is helpful in the management of sulfite-sensitive patients(Taylor et al., 1988). Minimal amounts of sulfite can induce symptoms. In our patient, when dexamethasone was administered to control her urticaria were applied, her periorbital edema developed and became more aggravated. We recommended avoiding sulfite-containing drugs and foods as well as aspirin-containing ones.

We have presented a unique clinical case of sulfite-



Fig. 1. Development of periorbital erythematous edema of the left eye after the oral provocation test with 200mg sodium bisulfite

induced periorbital edema which was localized on the left eye. As we do not have any decisive evidences to explain the pathogenesis, the possible contribution of IgE mediated mechanism in this patient seems to be very low.

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