

## CASE REPORTS

# Life-threatening facial edema due to pine caterpillar mimicking an allergic event

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### ABSTRACT

**Background:** Approximately 150 species of Lepidoptera have been described as causing damage to human skin. One of these species is the pine processionary caterpillar, which is responsible for dermatitis, contact urticaria, ocular lesions and rarely respiratory signs and anaphylactic reactions through IgE-mediated or non-IgE-mediated mechanisms. We report a pediatric case of severe orofacial edema mimicking an allergic reaction after ingestion of a pine processionary caterpillar; urgent airway intubation was required.

**Case report:** A 15-month-old boy was sleeping under a pine tree when his mother noted a pine caterpillar on his tongue. Because of rapidly developing facial swelling and respiratory distress, the infant was first taken to a local hospital where he received intravenous dexamethasone and pheniramine hydrogen maleate. On arrival at our emergency department, diffuse swelling and edema involving the tongue, perioral, nasal and perimandibular regions, and neck was noted, requiring urgent orotracheal intubation. There were no findings of anaphylaxis. The results of skin prick tests and specific IgE to com-

mon aero- and food allergens were negative. A skin prick test with extract of pine caterpillar was also negative. Prednisolone and pheniramine hydrogen maleate were administered for 7 days. The child gradually improved and was successfully extubated 4 days later.

**Conclusion:** Although oral contact with a pine processionary caterpillar in the form of ingestion is rare, it may cause significant local reaction and airway compromise mimicking an allergic event. In this situation, early intubation to maintain airway patency is a life-saving measure.

**Key words:** Airway. Edema. Infant. Pine processionary caterpillar. *Thaumetopoea pityocampa*.

### INTRODUCTION

The pine processionary caterpillar (*Thaumetopoea pityocampa*) is a nocturnal lepidoptera of the Thaumetopoeidae family<sup>1</sup>. It is well known that many caterpillars are harmful to humans and animals. The capacity of pine processionary caterpillar to trigger pathological dermatologic reactions is well known from ancient times<sup>2-5</sup>. The first descriptions were made by Reaumur in 1736<sup>2</sup> and since then different studies have provided new insights about the pathogenesis of these reactions<sup>3-6</sup>. In most of the exposed cases dermatitis, contact urticaria or ocular lesions may develop and a few of them present with systemic toxic symptoms<sup>6-10</sup>. Both IgE mediated and

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Figure 1.—Diffuse edema and swelling required emergent orotracheal intubation involving the perioral, perinasal, periorbital and perimandibular regions.

non IgE-mediated mechanisms are shown to be responsible from these reactions<sup>5,6</sup>. Herein, we present a child in whom severe orofacial local reaction mimicking an allergic event developed following accidental ingestion of a pine processionary caterpillar which lead to respiratory difficulty necessitating emergent airway intubation.

## CASE

The mother of a 15-month-old male noted a pine caterpillar on his tongue while he was sleeping in his cradle under a pinetree. She was able to remove the caterpillar, but a diffuse swelling and edema developed in his mouth, tongue and lips in a few minutes. After administration of intravenous dexametasone and pheniramine hydrogen maleate in a local hospital, he was referred to our emergency department because of respiratory distress.

On his first physical examination performed approximately at the sixth hour of the ingestion, he had severe dyspnea, irritability and a 0.5 cm visible wound on his tongue. Urgent orotracheal intubation was performed because of severe edema involving the perioral, nasal and perimandibular regions, oropharyngeal mucous membranes, and neck (fig. 1). There was no finding related to laryngospasm or bronchospasm.

Prednisolone 2 mg/kg/24 hr and pheniramine hydrogen maleate 20 mg/24 hr were started. By hospital day 4, severe facial and neck edema significantly resolved and the patient was successfully extubated. By hospital day 6, he was able to drink. Prednisolone and pheniramine hydrogen maleate were

both stopped at the seventh day. He was discharged on the 12th day when his symptoms and clinical findings were completely resolved.

On the second month follow-up visit, allergy work-up was made: total eosinophil count was 100/mm<sup>3</sup>, total serum IgE was 18 IU/ mL and IgE-FEIA was negative. Skin prick tests and specific IgE to common aero (pollens, mites, moulds, animal epithelia) and food allergens (milk, egg, cocoa and peanut) were found negative.

In order to evaluate the IgE mediated allergic reaction, we performed skin prick test with the extract of pine caterpillar. Extract of whole caterpillars was prepared at a dilution of 1:10 w/v, with some modification of the method of Vega et al<sup>5,11,12</sup>. Pine processionary caterpillars in the last larval stage (L5) were collected on pine trees from patient's habitant and homogenized with centrifugation for 15 min in sterile saline water. Homogenate was re-homogenized in liquid nitrogen and then filtered. The filtrate was centrifuged at 10 000  $\times$  g for 10 min and dialyzed against sterile distilled water at 4 °C overnight. Finally, extract was filtered for sterilization. After obtaining informed consent, it was tested in 30 non-exposed (fifteen atopic and fifteen non-atopic) cases. Histamine (10 mg/ml) was used as a positive control and physiologic saline solution as a negative one. A wheal and flare response of 3 mm or greater was considered a positive test result.

Skin prick test with this prepared extract of caterpillar was found negative in our case.

## DISCUSSION

Studies of Vega et al in pediatric population have showed that reactions to TP are frequent in pine tree zones, affecting 9.2 % of children and adolescents<sup>12</sup>. In this report they found that most frequent symptoms in pediatric population were contact urticaria (64.7 %) and contact dermatitis (35.3 %). It has been demonstrated that symptoms caused by the pine processionary caterpillar may occur by a toxic-irritating mechanism of the urticant hairs<sup>3</sup> or by IgE mediated allergic mechanisms<sup>4-6</sup>. Thaumetopoein is a urticant hair protein which has a direct effect on mast cells leading to an IgE-independent degranulation<sup>13,14,15</sup>.

To confirm the diagnosis of IgE mediated allergy to pine processionary caterpillar in children, skin prick test is a safe and useful screening test<sup>12</sup>. It was found negative in our patient. This result imply that non-IgE mediated mechanisms play a role in the development of this reaction. Additionally, there were no clinical signs or symptoms of anaphylaxis such as

laryngospasm, bronchospasm and hypotension. All of these findings supported that non-IgE-mediated mechanisms were responsible from the development of this severe reaction in our case. It mimicked an allergic event or anaphylaxis with rapidly developing clinical symptoms and signs and acute respiratory distress necessitating emergent intubation. But, there were no evidence of acute allergic phenomenon, therefore, it was not an allergic reaction or anaphylactic reaction. It was a very severe and life-threatening local reaction.

Oral exposure with caterpillar as an ingestion has been reported in the literature as an unusual source of ingestion and most of these cases were children under age 2<sup>9</sup>. Pitetti et al<sup>9</sup> reported ten patients presented to the emergency department following ingestion of a caterpillar. Local reactions such as drooling, refusal to drink and mild local edema were noted in nine of these cases, but neither of them were developed severe local reaction or respiratory distress requiring airway intubation as occurred in our case.

Treatment is determined by the symptomatology in these patients. Glucocorticoids may slow or halt the progression of edema and prophylactic airway intubation can be a life-saving measure.

The case herein described is interesting because of the contact site of the caterpillar obstructing the entry of the upper airways by causing local swelling and edema leading to life-threatening condition. It is an unusual source of ingestion as well as an unusual local but severe reaction leading to airway compromise with this kind of exposure. How it might mimic an allergic event is another interesting view of this case.

It must be kept in mind that contact to the head and neck with caterpillar may result in a severe local reaction which resemble an allergic event; careful physical examination and laboratory assessment can help to distinguish this two entity. Another impor-

tant point regarding the rare facial contact with caterpillar is the anticipation of complications related to airway compromise.

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