



Sudden Anosmia due to Otapiapia (Organophosphate Pesticide) Exposure

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Abstract:

Disorders of smell are generally difficult to diagnose and treat, often because of a lack of knowledge and understanding of this sense and its disease state. An alteration in smell may be life threatening at times like impairment of detection of smoke in a fire. Anosmia can occur through exposure to environmental toxins. Exposure to toxins accounts for 1 - 5% of all olfactory disorders. A case report of a sudden anosmia as a result of accidental exposure to "otapiapia", local organophosphate based pesticide is presented.

Keywords: Anosmia, otapiapia, organophosphate poisoning

Introduction

Anosmia is a complete loss of smell. It can occur through exposure to environmental toxins, accidental exposure, poor industrial hygiene or exposure to low levels of toxins in the ambient air over long periods. The loss can lead to transient olfactory disorders, irreversible anosmia or temporary olfactory fatigue.

There is paucity of reports concerning organophosphate accidental exposure despite the readily availability of various registered organophosphate-based containing pesticides marketed as Raid, Baygon, Sheltox, Gamalin etc. Worldwide organophosphate poisoning occurs following accidental exposure to pesticides in and around the home and farm [1]. We present a case report of a sudden anosmia due to accidental exposure to "otapiapia", local organophosphate based pesticide used in malaria endemic area and is readily available, cheap but unpatented.

Case Report

We report a case of 38 year old military officer who presented to our clinic with three weeks history of sudden anosmia following accidental inhalation of otapiapia while trying to spray his room. He had an irritation in the nose accompanied by excessive bouts of sneezing. This was not accompanied by difficulty in breathing, cough or vomiting. His past medical history was unremarkable with no history of rhinosinusitis, nose trauma, head injury, diabetes or asthma. He took alcohol but was nonsmoker.

On examination patient was a well build middle age man, with normal external nasal pyramid and patent nasal cavities. His anterior and posterior rhinoscopies appeared to be normal. X-ray paranasal sinuses revealed normal paranasal sinuses. Blood biochemistry was within normal range. A presumptive diagnosis of sudden and irreversible anosmia due to inhalation of otapiapia was made. He was placed on multivitamins and followed up for six months with no improvement.

Discussion

Over the last few decades agricultural pesticides have become a common household item in rural areas of developing countries. Due to their easy availability, pesticide self-poisoning has become common health problem [2,3,4]. Acute pesticide poisoning is now an important cause of morbidity and mortality worldwide [5]. World Health Organization (WHO) estimates, around 3 million poisoning cases occur annually with 200,000 deaths [5] and 99% of these deaths occur in developing countries.

Olfactory disorders occur in response to environmental toxins because of the direct exposure of the olfactory neurones to airborne agents. Exposure to toxins accounting for 1 - 5% of all olfactory disorders [6], is often underestimated in chronic exposures. One theory for age related loss of olfaction is accumulative damage to the epithelium from lifetime toxin exposure

[7]. A report of an association between loss of smell and environmental toxins often comes from acute accidental exposures [8]. Chronic exposure to environmental toxins can cause damage over a long period of time with unnoticed gradual decrease in olfactory function [8]. Many reports on olfactory disorder in human are based on individual acute exposures or from groups of workers exposed over time, uncontrolled and based on subjective accounts [7,8]. Multiple medications have been associated with loss of olfaction ability and may act through similar mechanism as environmental toxins.

The olfactory epithelium in humans comprises a relatively small area in the superior aspect of the nasal cavity adjacent to cribriform plate, and only approximately 10% of the airflow extends to the epithelium during normal respiration [9], therefore, most inhaled substances are exposed to the respiratory epithelium. The olfactory epithelium may degenerate in response to inhaled or systemic toxic agents, and repopulate the component epithelium cells, including functioning receptor neurons as long as the lesion spares the necessary regenerating cells [10]. Nonimprovement of anosmia in our case could be due to damage of regenerating cells.

There are numerous organophosphate esters that have been formulated into un-patented commercial pesticides for domestic and farm use worldwide [1,11]. People of Nigeria and similar countries are at the risk of pesticide poisoning because of the widespread availability, unregulated use, poor packaging of locally manufactured pesticides [11,12]. Improper packaging, not labelling of the storage container and absent of instructions for handling of this product contributes most to the accidental poisoning. Otapiapia is popular unpatented brand of mosquito repellent in Northern Nigeria, packaged in small transparent 5-10 ml bottle without any label.

In conclusion, local manufacturers need to be advised and persuaded to compulsorily market their pesticides in tamper-proof packages along with labels mentioning its poisonous nature, contents and antidote in the unfortunate instances of accidental exposure in conformity with international standards. Legislation and law enforcement against substandard packaging and home storage of potential toxins may be further helpful. This case report is intended to draw the attention of clinicians of the developing world to the potential of organophosphate exposure to produce anosmia.

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