Journal of Clinical Toxicology
ISSN: 2161-0495

Jindal et al., J Clinic Toxicol 2013, 3:2
DOI: 10.4172/2161-0495.1000159

Case Report Open Access

Accidental Poisoning with Calcium Carbide

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Case Summary

A 2 years old boy with no previous significant illness presented to emergency facility at our hospital with swelling of lower lip, increased salivation and multiple ulcers on oral mucosa, lips and on anterior chest. Careful history revealed that while playing, child put paper piece contaminated with calcium carbide in mouth. Calcium carbide was used to ripe the mangoes. Child was conscious, with stable vitals, no loose stools, no altered sensorium. Thorough examination revealed normal systemic examination and grade II mucosal ulcers in oral cavity, edema and excoriation on the area of anterior chest wall which came in contact with drooling saliva (Figure 1). Blood biochemical parameters, blood gas and chest X-ray was normal. He was managed conservatively with intravenous fluids; milk based diet, antacid and painkillers and discharged after 2 days with resolving lesions (Figure 2).

Figure 1: Mucosal and Cutaneous contact burns due to calcium carbide.

Figure 2: Healed cutaneous lesion over chest after supportive care.

Discussion

Calcium carbide is a whitish grey powder which is easily available in Indian market. Apart from its industrial use, it is frequently used in domestic settings for unclogging the drain as well as ripening fruits. Calcium carbide is an alkali, and it releases acetylene gas on contact with moisture. Acetylene gas is a chemical analogue of ethylene gas which is a natural fruit ripening agent. Commercialized ripening is an essential part of fruit business as ripe fruits are not suitable to transport and distribute due to their fast rottening. While acetylene gas is depressant to central nervous system and irritant to respiratory system, its chemical reaction generates heat which can cause burn and damage to mucosa, skin and eyes on contact. Index case consumed discarded remnants of calcium carbide leading to thermal injury of buccal mucosa and skin with no features of respiratory and central nervous system effects. Per et al reported a case of coma following exposure to calcium carbide laden dates [1]. There are deaths reported with calcium carbide exposure in industrial settings [2].

Acute toxicity of calcium carbide ingestion is generally mild and manageable with supportive care but it can cause grade III mucositis, severe erosive esophageal and gastric damage as well as perforation. Chronic exposure can lead to chelitis, dry mouth fissured tongue with superimposed infections and chronic skin ulcers. It has not been found that calcium carbide has teratogenic, mutagenic or affecting reproductive ability [3].

There is no antidote available for calcium carbide poisoning. Area of contact must be washed generously with water. On ingestion, extra water should be taken to dilute its irritant effect and no bowel wash or emesis induction is recommended. Pulmonary and central nervous system manifestations also need supportive care only. In index case, cutaneous and mucosal burns were evident, and they healed on conservative treatment. Following endoscopic evaluation indicated that esophagus was normal.

Biological methods to promote fruit ripening should be promoted and washing of fruits properly prior to consumption is desired. Fruits can easily be ripened by placing a ripe fruit in vicinity as it releases

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Received January 30, 2013; **Accepted** April 19, 2013; **Published** April 22, 2013

Citation: Jindal T, Agrawal N, Sangwan S (2013) Accidental Poisoning with Calcium Carbide. J Clinic Toxicol 3: 159. doi:10.4172/2161-0495.1000159

ethylene gas which induces ripening [4]. Calcium carbide is a potentially harmful compound in domestic setting. Its sale, purchase and use for food are prohibited by law [5]. There is a need of more awareness about potential harmful effects of this compound and strict implementation of legislation to avoid health hazard.

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