Potassium Cyanide Poisoning

N.C. Prajapati
R.K. Puri
M.P. Sarangi
S. Yadav
A. Khalil

Potassium cyanide (KCN) is considered to be a very rapidly acting poison leading to instantaneous death. Poisoning with this salt in children is very rare and till date only one report exists in world literature when a 17-month-old Negro child had accidentally consumed KCN(1).

We report here ten children who consumed KCN accidentally and were brought to the hospital. To the best of our knowledge this is the first report of mass accidental KCN poisoning in children.

Case Report

Ten children, aged 2-7 years were admitted after having consumed some white powder. The children were playing near a garbage can, when one of them found three packets of powder. He picked it up and distributed the contents to all children. They consumed it by drinking in water or licking it dry. Three children immediately fell ill, complaining of pain in abdomen and giddiness. Parents noticed bluish discoloration of lips in one child and suspecting poisoning induced mechanical vomiting in all the children.

The children were immediately rushed to the hospital. One seven year old child was brought dead while another three year old male expired in resuscitation ward despite immediate resuscitative measures. The clinical details of all cases are summarized in the *Table.*

As nature of poisonous substance could not be ascertained, the children were managed with supportive care like–gastric lavage, oxygen and intravenous fluids. Eight children who survived were discharged after 48 hours of observation. The parents had brought the white powder (consumed by children) which was sent for chemical analysis along with the gastric lavage fluid. The bodies of the two children who expired were sent for post mortem examination.

Post Mortem Examination: The post mortem examination revealed no evidence of terminal cyanosis. Stomach was found to contain 50 ml of creamy fluid without any characteristic odor. All the internal organs including stomach were congested and the blood and other tissues were bright red in color. The viscerae were preserved and sent for chemical analysis.

Chemical Analysis: The preserved viscerae of the 2 deceased children, the white powder and the gastric lavage fluid were found to have KCN on chemical analysis.

Discussion

Potassium cyanide is one of the most popular suicidal agent(2) but due to its bitter taste, characteristic odor and hence easy detectability, it is rarely used as a homicidal agent(3). It may at times be a cause of accidental poisoning(1) as in our cases.

From the Department of Pediatric and Forensic Medicine, Maulana Azad Medical College and Associated LNJPN Hospital, New Delhi 110 002.

Reprint requests: Dr. N.C. Prajapati, 229, Dholi Piou, Mathura.

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TABLE–*Clinical Details of the Cases*

Child	Age (years)	Sex	Interval between consumption and onset of symptoms (hours)	Symptoms/signs
1	2	M	–	Asymptomatic
2*	3	M	1	Nausea, pain in abdomen, drowsiness, cyanosis
3	3½	F	1½	Nausea, pain in abdomen, restlessness
4	4	F	–	Asymptomatic
5	4	F	–	Asymptomatic
6	5	F	2	Nausea, pain in abdomen, restlessness
7*	7	M	1	Pain in abdomen, drowsiness, cyanosis, labored respiration
8	7	M	1½	Pain in abdomen, nausea, mild cyanosis, restlessness
9	7	F	1½	Pain in abdomen, nausea, mild cyanosis
10	7	F	–	Asymptomatic

* Both these children consumed the powder by mixing it with water and expired, others licked it dry and recovered completely.

Two out of the ten children died as they had probably consumed large amount of KCN dissolved in water (*Table*). Rest of the eight children who just licked the powder dry, did not develop serious toxic effects, presumably due to ingestion of non fatal dose, natural detoxification of KCN in the body(4-7) and/or supportive management(7-10). Cyanosis, an uncommon feature, is due to depression of vital centers and has also been reported by others (4,10,11). Cyanosis though clinically evident was not corroborated by post mortem findings, this could be due to alteration of cyanides in the body after death(11).

Diagnosis of KCN poisoning is difficult and high degree of suspicion is essential. Symptoms like headache, giddiness, excessive salivation, drowsiness, nausea, tachycardia, convulsions, hypotension, *etc.* are non specific symptoms reflecting cellular hypoxia. The typical scent of 'pleasant almond' or alterations in the appearance of the fungal vessels on fundoscopic examination are useful diagnostic signs but have their own limitations(2,4,8,13). Non specific supportive therapy appears to be the mainstay of KCN poisoning management(7-10). When encountered with such a case, 100% oxygen should be administered immediately, gastric lavage is performed using oxidising agents like 5% sodium thiosulphate, 0.1% potassium permanganate or 3% hydrogen peroxide. Seizures are

treated with intravenous diazepam(14). Activated charcoal is not of much use as 1 g binds only 35 mg of cyanide. The treating doctor must avoid mouth to mouth respiration for fear of inhalation of cyanide vapors.

The role of several specific antidotes like amyl nitrite, sodium nitrite, sodium thiosulphate, amino propiophen, cobalt edetate and hydroxycobalamin is debatable and associated with significant inherent toxicity(15). These antibodies should, therefore, be used with utmost caution when indicated.

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Salmonella typhi Meningitis

M. Srilakshmi
S. Mahadevan
S. Srinivasan

Meningitis due to *Salmonella typhi* is a rare condition, especially in older children(1-3). We present 3 cases of *S. typhi*

From the Department of Pediatrics, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry.

Reprint requests: Dr. S. Srinivasan, Department of Pediatrics, JIPMER, Pondicherry 605 006.

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