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Unconventional Therapeutic Options for Treatment of Cyanide Poisoning

Kirti C. Ghimire[1*] Dianne Marie M. De Jesus[1] and John David L. Comandante[2]
1. Department of Emergency Medicine, Makati Medical Center, Makati City, Philippines
2. National Poison Management and Control Center, Philippine General Hospital, Manila, Philippines

INTRODUCTION: Cyanide is a mitochondrial toxin which causes cellular hypoxia leading to death within minutes to hours. In the Philippines, alkaline silver jewelry cleaner is major culprit of cyanide poisoning. Unfortunately, antidote is limited to sodium nitrite-sodium thiosulfate procured only from Philippine General Hospital (PGH). Surprisingly, we reported significant resolution of cyanide poisoning following administration of naloxone and nitroglycerin patch even without administration of sodium thiosulfate.

CASE REPORT: A 21-year old female with previous suicidal attempts was rushed to the Emergency Department in Makati Medical Center for decreased sensorium and seizures one hour prior to consult. She was comatose (GCS 3) but family refused intubation, hence only bag valve mask ventilation was performed. Arterial blood gases showed severe metabolic acidosis (pH = 6.95, HCO3 = 5.30). Patient was given Vitamin B complex (containing 250 mcg cyanocobalamin), 0.4mg Naloxone and 100mEq Sodium bicarbonate after which she regained her consciousness and later revealed intake of unidentified silver jewelry cleaner (pH 11). Nitroglycerin (NTG) patch was applied and patient was transferred to the Philippine General Hospital where patient she was given sodium thiosulfate. Apparently, her condition improved even prior to the administration of the antidote as supported by normal repeat laboratory results.

DISCUSSION: In this case where sodium thiosulfate was a limiting resource, administration all together of these unusual antidotes showed significant clinical improvement. The initial management was directed towards approach to coma of unknown etiology. Interestingly, naloxone provides a significant neuroprotection thorough enhancing effects of endogenous sodium thiosulfate. Furthermore, NTG patch act as CN antagonist through nitric oxide formation. Early administration of ISDN up to 7 mins proved its survival benefit in rabbits; however, studies on human and its optimal timing is yet to be elucidated.