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Hydrogen sulfide poisoning in Thailand before and after the establishment of the National Antidote Project.

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Objective: To describe the patient characteristics, clinical effects, treatments, antidote use, and medical outcomes of acute hydrogen sulfide (H2S) poisoning in Thailand before and after the National Antidote Project (NAP) implementation.

Methods: This is a retrospective study of acute H2S poisoning cases reported to Ramathibodi Poison Center (RPC) from 1 January 2007 to 31 December 2017. In Thailand, the NAP has operated since November 2010 to manage the national antidote stockpile, educate healthcare providers on appropriate antidote use, and evaluate antidote usage. Characteristics, clinical effects, treatments, medical outcomes, antidote use, and appropriateness of antidote use (defined as correct indication, proper dosing regimen, and administration within 90 min) before and after NAP implementation were recorded.

Results: A total of 70 cases involving hydrogen sulfide were reported including 60 cases (85.7%) during NAP (Project group) and 10 cases (14.3%) pre-NAP implementation (Before group). All were male. Median age was 31 years (range 17-57 years). All were unintentional inhalational exposures. Common environments related to H2S exposure were fishing ships (41.4%), factories (28.6%), and wastewater ponds (12.9%). All patients were symptomatic. Eight cases had cardiac arrest and received cardiopulmonary resuscitation before transfer (6 in Project group [10.0%] and 2 in Before group [20.0%]). Four of the eight cases died prior to reaching a healthcare facility (2 in Project group [3.3%] and 2 in Before group [20.0%]). Common clinical effects were CNS depression (60.0%), respiratory failure (41.4%), dyspnea (38.6%), pneumonitis (28.6%), and fever/hyperthermia (27.1%). Common treatments were oxygen supplement (77.1%), intravenous fluid (67.1%), endotracheal intubation (52.9%), artificial ventilation (50.0%), and antibiotics (32.9%). Sodium nitrite administration was reported in 20 cases (28.6%); included 18 cases (30.0%) of the Project group and 2 cases (20.0%) of the Before group. All sodium nitrite administrations involved an appropriate dose regimen and the correct indication. Of the cases who received sodium nitrite, 15 of 18 cases (83.3) in the Project group received sodium nitrite within 90 minutes after poison center consultation whereas none did in the Before group. All 13 cases who died presented with severe symptoms initially (9 deaths) or died prior to reaching a health facility (4 deaths). There was no significant difference in overall mortality rate found between groups (3 [30.0%] deaths in the Before group and 10 [16.7%] deaths in the Project group, odd ratio 0.47; 95% confident interval 0.09-3.31).

Conclusions: NAP establishment was associated with an increase in sodium nitrite use and antidote administration within 90 minutes after consultations. NAP establishment was not significantly related with decreased mortality in acute H2S poisoning.