

**PP59 EXTINGUISHING THE FIRE
WITHIN: DRY POWDER FIRE
EXTINGUISHER INGESTION IN A
CRITICAL COVID-19 PATIENT**

SIA WEN LI¹, SITI NUR ALIYAH ZAMBRI¹,
MOHD HAFYUZUDDIN MD YUSUF¹,
MOHAMMAD AIZUDDIN AZIZAH
ARIFFIN¹

¹ *UNIVERSITY OF MALAYA MEDICAL
CENTRE, KUALA LUMPUR, MALAYSIA*

INTRODUCTION:

Systemic toxicity of dry powder fire extinguisher ingestion corresponds to its active ingredient, in this case, monoammonium phosphate (MAP). This is further complicated by the presence of coronavirus-disease-2019 (COVID-19).

CASE DESCRIPTION:

A 43-year-old man with underlying schizophrenia presented with persistent vomiting of yellowish substance and difficulty breathing after ingesting dry powder fire extinguisher 2 hours prior. He was alert, with respiratory rate 45 breaths per minute, oxygen saturation 87% under room air, blood pressure 160/70 mmHg, and heart rate 112 beats per minute. Arterial blood gas showed type 1 respiratory failure with severe high anion gap metabolic acidosis (HAGMA). Serum phosphate was raised; 4.9 mmol/L. Chest radiograph showed right lower zone consolidation.

Oral suction failed to remove the clumping powdery substance in patient's oral cavity. Immediate flexible naso-pharyngolaryngoscopy by the otolaryngology team showed no obstructing airway with non-oedematous structures. Patient was positioned bed-up-head-elevated 30 degrees, apnoeic pre-oxygenation given, and intubation done via video laryngoscope with first pass success. There was moderate

yellowish secretion and percentage of glottic opening was 100%.

As COVID-19 rapid antigen test came back positive, diagnosis was revised to dry powder fire extinguisher ingestion complicated with critical COVID-19, type 1 respiratory failure, and severe HAGMA. Patient was admitted to the intensive care unit where he developed ventilator-associated pneumonia, complicated with acute kidney injury, and worsening metabolic acidosis. He underwent haemodialysis (HD). He was successfully extubated after 3 weeks, and discharged the following week.

DISCUSSION:

MAP is absorbed via gastrointestinal and respiratory tracts. Its main metabolite is phosphate, which causes nephropathy and metabolic acidosis when elevated. Additionally, MAP inhalation also causes acute respiratory distress syndrome (ARDS). As no antidote exists, treatment is mainly supportive.

Hypoxia in this patient is multifactorial; both from MAP and COVID-19, causing ARDS. Thus, early intubation is necessary, and ventilation should take into consideration both metabolic acidosis and ARDS strategies. HD should also be initiated early for extracorporeal toxin clearance.

CONCLUSION:

MAP toxicity is debilitating, further exacerbated by concomitant COVID-19 infection. Clinicians should have a high index of suspicion for systemic toxicity when dealing with MAP.

KEYWORDS:

Airway, Fire extinguisher, COVID-19