

## Acute Compartment Syndrome Secondary to Carbon Monoxide Poisoning: Case Report

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### INTRODUCTION:

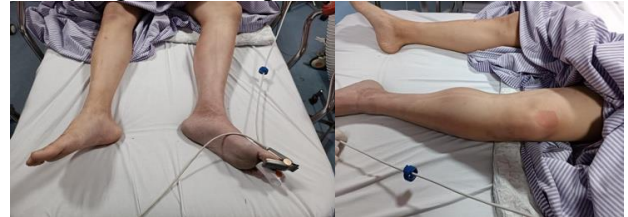
Carbon Monoxide (CO) is a colourless gas that is formed by incomplete burning of fossil fuels/charcoals. Its normal concentration in the atmosphere is <0.001% and can be fatal when the level exceeds 0.1%. CO poisoning can indirectly contribute to rhabdomyolysis, a condition characterized by the breakdown of skeletal muscle tissue and the release of its contents into the bloodstream, which can lead to compartment syndrome.

Compartment syndrome is usually seen because of trauma such as fracture, soft tissue injury, crush syndrome and blunt injury with 75% of the patients have fractures. However, many cases of compartment syndrome have been reported in nontraumatic settings including ischemia-reperfusion events after arterial injury, exercises, prolonged limb compression, anticoagulation therapy, fluid infusion, snake bite, thrombosis, viral myositis, placement of orthopaedic casts, circumferential dressing, burns and bleeding disorder.

### REPORT:

A 24-year-old man without any known medical illness, presented to Emergency Department with peripheral cyanosis, generalized body weakness, tongue swelling with SPO<sub>2</sub> 80% on room air. Patient was found by his friend inside a closed room with a lit charcoal. Attended by our team, patient was already intubated for airway protection. Examination of extremities revealed bluish discoloration of all 4 extremities but worst on left lower limb. Bilateral upper limbs and right lower limb discoloration resolved after 1 hour since patient arrived to casualty, but left lower limb remain swollen, bluish with skin mottling from toes up to mid-shin. Left leg compartment firm, distal pulses not palpable, capillary refill time prolonged and unable to get SPO<sub>2</sub> reading from all toes. Bedside doppler examination noted

no signal over PTA & DPA, while popliteal artery signal was triphasic.



**Figure 1:** Clinical Pictures of Lower Limbs

No CTA done in view of atraumatic presentation, likely vascular spasm, hence patient underwent emergency fasciotomy. Circulation post-op improved with more defined skin demarcation and after 2 weeks, left foot colour & circulation restored.



**Figure 2:** Clinical Pictures of Left Leg on Day 3 & 2 Weeks Post-Fasciotomy

### CONCLUSION:

CO itself does not directly cause compartment syndrome but the cascade of events involving muscle damage, rhabdomyolysis and subsequent swelling within the muscle compartments due to the release of cellular contents into the bloodstream can contribute to development of compartment syndrome. Although the presence of compartment syndrome is rare during CO poisoning, it could worsen the prognosis if treatment is delayed.

### REFERENCES:

1. Jung Woo Ji, CO Poisoning Case Report, Hip Pelvis 2017 Sep; 29(3): 204-209
2. Jang SW, Complications of CO Poisoning. J Korean Soc Clin Toxicol, 2009; 7: 10-18