

White phosphorus, it's a burning issue

Dr Rachel Kornhaber^{1,2}, Dr Uri Aviv², Dr Moti Harats^{2,3,4}, Professor Josef Haik^{1,2,3,4}

¹ College of Health and Medicine, University of Tasmania, Rozelle, Australia, ² National Burns Center, Sheba Medical Center, Israel, Tel Hashomer, Israel, ³ Institute for Health Research, University of Notre Dame, Fremantle, Israel, ⁴ Sackler School of Medicine, Tel Aviv University, Tel Aviv, Israel

01 INTRODUCTION

Burns from white phosphorus however rare and a challenge for burn clinicians. Associated with smaller surface areas, white phosphorus burns have a high morbidity rate. White phosphorus is used for military purposes and within industry for the manufacture of fireworks and agricultural products and is identified as a chemical burn.

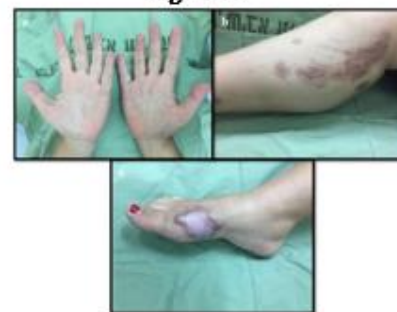
02 CARE PRESENTATION

The aim of this case review was to highlight white phosphorus as a mechanism of injury for deep chemical burns and the limited literature available to guide current practice. We present the case of a 40 years old who sustained a 2% partial to full thickness burn from white phosphorus collected from a beach in Tel Aviv (See Figure 1).¹ Assessment revealed chemical burns from contact with white phosphorus to bilateral hands, right thigh and foot. No adequate first aid was administered at the time of the injury and commenced at the burns center. The area underwent decontamination, irrigation and debridement of devitalised tissue.

Figure 1



Figure 2



03 TREATMENT

Burns were treated with mafenide acetate on the right medial calf and dorsum of foot and Flaminal Forte for the palmar wounds. As white phosphorus become liquid at 44 °C, it is critical that the use of warm water is avoided.

Throughout the hospitalization period, blood tests were routinely taken twice weekly. Phosphorus level increased gradually from 2.90 mg/dL on day 1 to 4.40 mg/dL on day 14. CRP levels increased throughout the first 5 days and reached 122.21 mg/L, then gradually decreased to normal parameters.

04 OUTCOME

The patient was discharged 22 days after admission and followed up in the outpatient clinic. Pressure garments were provided however; hypertrophic scars began to develop on the dorsum of her right foot. Silicone sheets were provided under the pressure garment. The patient was followed up 7 months post injury (See Figure. 2).¹

05 DISCUSSION

Treatment modalities for white phosphorus have historically been controversial due to its toxic effect. Highly fat soluble, white phosphorus absorption results in necrosis of the liver or kidney² and can cause serious physiological alterations including hypocalcemia, hyperphosphatemia with calcium-phosphate shifts, as soon as 1 hour after the burn.² A small surface area of 10–15% TBSA can result in a sudden and often unexpected death.³ Excision of the area within 1 hour of the burn is reported not to improve survival rates.⁴ White phosphorus burns have a unique nature making both diagnosis and management complex and challenging for clinicians.

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