A Case of Non-Cardiogenic Pulmonary Edema Secondary to Fentanyl Overdose

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INTRODUCTION

- Fentanyl belongs to a broad class of medications called opioids that are frequently used for their analgesic and euphoric effects (1). Recently their misuse has resulted in a nationwide epidemic with a particular focus on fentanyl that has caused 70,601 deaths in 2021 alone (2).
- Although the most well-documented sequelae of opioid use and misuse is respiratory and central nervous system depression, many other complications are associated with these drugs (1). Non-cardiogenic pulmonary edema (NCPE) is a rare but potentially life-threatening complication of opioid overdose that needs to be diagnosed and treated in a timely manner (3).
- Whilst previous medical literature on pulmonary edema associated with opioids has focused on heroin (4), fentanyl is emerging as a leading cause of mortality (2) and produces a similar clinical presentation of persistent hypoxia and pulmonary infiltrates consistent with non-cardiogenic pulmonary edema (1).

CASE PRESENTATION

- We present a case of a 33-year-old male with no significant past medial history who presented with an episode of unresponsiveness that improved after administration of naloxone in the field. Patient endorsed inhaling a crushed fentanyl pill. On admission patient had worsening hypoxia requiring increased oxygen and bilateral crackles on auscultation. Furthermore, a CT Pulmonary Embolism angiogram revealed nodular opacities that were diffusely scattered bilaterally (Image 1).
- An echocardiogram was done showing an EF of 55-65% and otherwise unremarkable. BNP level was 187 pg/ml. Henceforth clinical and diagnostic findings were consistent with non-cardiogenic pulmonary edema (NCPE) in the setting of inhalation lung injury. The patient remained on broad spectrum antibiotics and was eventually switched to low dose steroids with improvement in oxygen saturation. Ultimately, the patient was weaned off of oxygen and discharged on a tapering dose of steroids.

DISCUSSION

- NCPE is a well-known albeit uncommon complication of opioid use, extensively studied in cases associated with heroin. However, it is exceedingly rare to find cases involving NCPE and the synthetic opioid fentanyl (3).
- Opioid-induced NCPE is potentially life-threatening and should be considered as a differential in patients with ongoing hypoxia despite initial improvement in respiratory depression from opioid intoxication (5). Although treatment is largely supportive, a minority of patients will require mechanical ventilation making prompt diagnosis and management essential (3,5).

CONCLUSION

- With increasing prevalence of drug overdoses related to ultra-potent opioids like fentanyl ongoing research on their potential complications like NCPE is needed.

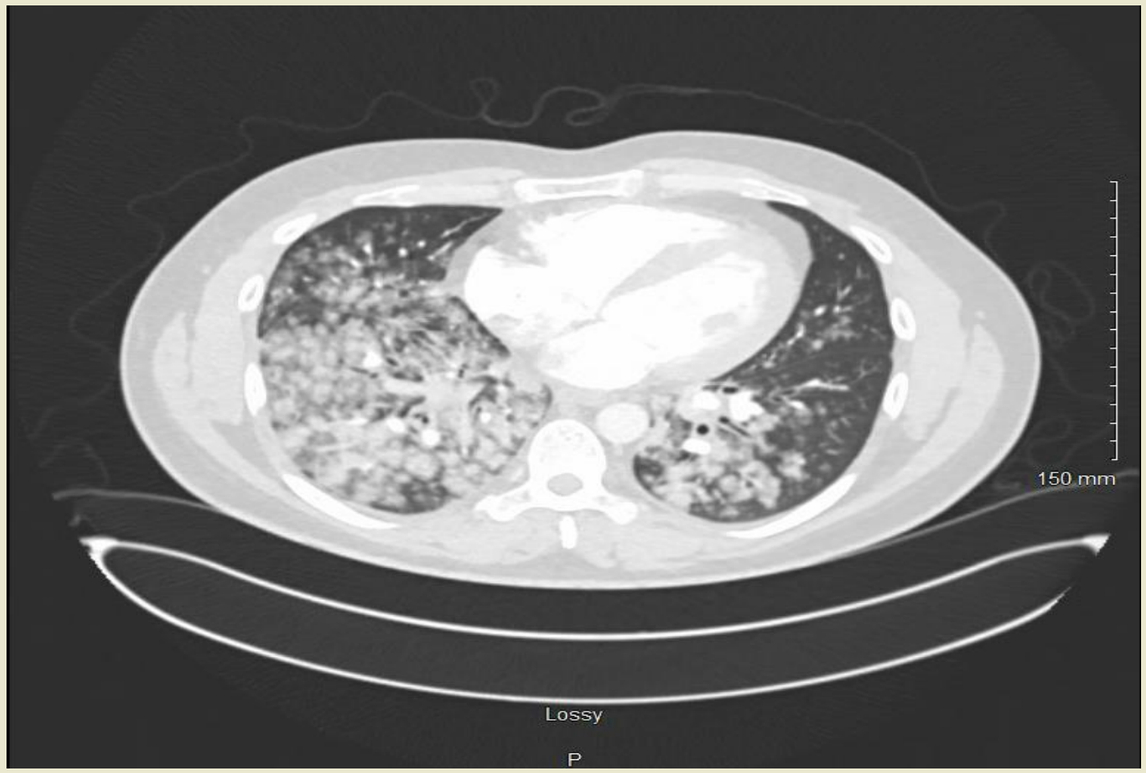

Image 1: *CT Pulmonary Embolism angiogram revealed nodular opacities that were diffusely scattered bilaterally.*

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