Can Heroin Poisoning Lead To Stomach Necrosis? A Case Report

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Abstract

Introduction: Opiate (including heroin) use prevalence is 1.2% of the world population according to the last report of UNOCD. In Iran about 2 million people of population are drug abusers..Heroin reduces gastric motility and prolongs gastric emptying time and it can cause gastric dilation which can be a reason for gastric ischemia . Gastric ischemia is an uncommon condition do to the rich gastric blood perfusion and collateral arteries . As some of studies show, gastric dilation can be a cause for gastric necrosis.

Case presentation: A 22-year-old woman who presented to our hospital with severe abdominal pain and several episodes of vomiting. The patient declared that she had a history of addiction to methamphetamine and heroin. In abdominal examination, a soft and non-distended abdomen with generalized tenderness, mostly in hypogastric region without rebound tenderness was revealed.Abdominal radiograph revealed a much distended stomach. A non-contrast CT abdomen confirmed severe gastric dilatation. On endoscopy, multiple necrotic lesions were seen throughout the stomach and mostly in the proximal part. Our finding in the laparotomy was gastric necrosis in the proximal part, which resulted in a total gastrectomy. esophagojejunostomy with roux en y reconstruction was done after total gastrectomy.

Conclusion: Opioids can increase the risk of GI dysfunction and they can increase risk of infection in GI tract. In our case ,abuse of heroin caused a gastric dilation and massive gastric necrosis.

Keywords: Heroin poisoning,complication,gastric necrosis

Introduction

Heroin is an addictive semisynthetic opioid and is a white powder with a bitter taste but it is frequently mixed with other substances[1].Mortality rates of heroin overdose are higher in the users who use other substances and alcohol and it occurs mostly in long term users [2].In Iran about 2 million people use illicit drugs at a daily basis , which is about 2.7% of the population[3].Studies show that lifetime rates of opiate use – mostly opium – were between 1.2 an 8.6% in different parts of the country[4].Heroin can be injected intravenously or subcutaneously, ingested,

snorted, or smoked and like other narcotics, reduces the brain's responsiveness to hypoxia as a result of respiratory depression . Heroin can also effect on baroreceptor and causes bradycardia. It stimulates histamine release and It also reduces peripheral vascular resistance and it causes mild vasodilation of the cutaneous blood vessels[5],[6].It also reduces gastric motility and prolongs gastric emptying time and it can cause gastric dilation which can be a reason for gastric ischemia[7].Gastric ischemia is an uncommon condition do to the rich gastric blood perfusion and collateral arteries .There are several types of gastric ischemia like , gastric infarction , gastric necrosis, moribund stomach, stress ulceration, chronic ischemic gastritis.As some of studies show ,gastric dilation can be a cause for gastric necrosis.
[8],[9]. we are going to present a 22 years old addict women with gastric necrosis do to heroin overdose.

Case presentation

A 22-year-old female was admitted to our emergency department due to severe abdominal pain with several episodes of vomiting. she reported no medical or pharmacotherapy history but in her social history she had a history of addiction to Methamphetamine and Heroin. The patient declared that she had injected large amounts of heroin intravenously in the hours before the onset of her symptoms.

The patient was oriented to time, place and person and her physical examination showed a Glasgow Coma Scale score of 15/15. In her vital signs a decrease in blood pressure of 80/60mm Hg, a tachycardic pulse rate of 120 beats/minute, respiratory rate 22 breaths/minute and oxygen saturation of 95% in room air were assessed. In abdominal examination there was mild ditension and mild generalized tenderness .

Fluid resuscitation and serum therapy were started for the patient. Moreover, a nasogastric tube (NG tube) was inserted for the patient for gastric decompression and some gastric secretion was removed. The patient was then admitted to the intensive care unit (ICU) and the patient's urine output with the Foley catheter insertion was properly evaluated.

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Table 1: laboratory findings

Blood index	case	Blood index	case
WBC	15,000	pH	7.21
PLT	270,000	HCO3	15
Hb	14	Base Excess	-8
BUN	60	CR	3.5

WBC: White blood cells; PLT: platelet; Hb: hemoglobin; BUN: Blood Urea Nitrogen; CR: Creatinine

Laboratory findings are reported in table 1. In her laboratory findings coagulation tests, liver function tests, amylase and lipase were in normal range. Venous blood gas analysis indicated a metabolic acidosis and the urine toxicology test was positive for morphine.Her abdominal radiograph on the day of hospitalization revealed a much distended stomach (Figure1). A non-contrast CT abdomen confirmed severe gastric dilatation (Figure2). In laboratory findings on the day after patient's hospitalization creatinine back to the normal range. Moreover in physical examination patient's general condition became much better but her abdominal tenderness persisted. Therefore, endoscopy was performed for the patient. On endoscopy, multiple necrotic lesions were seen throughout the stomach and mostly in the proximal part(figure3). Due to patient's endoscopic results, her persisted tenderness and an increase in NG tube drainage up to 2400 cc of biliary secretion, made the patient a laparotomy candidate. During the surgery, the patient's abdomen was opened with a midline incision. Our finding in the surgery was gastric necrosis in the proximal part, which resulted in a total gastrectomy. esophagojejunostomy with roux en y reconstruction was done after total gastrectomy. The patient was transferred to the ICU after surgery. On the second day of post-operation date, she tolerated liquids and then soft diet. The patient therefore was discharged in good general condition on seventh day of post-operation date. She was doing well during

follow-up visits in the outpatient department two weeks and two months after her discharge.

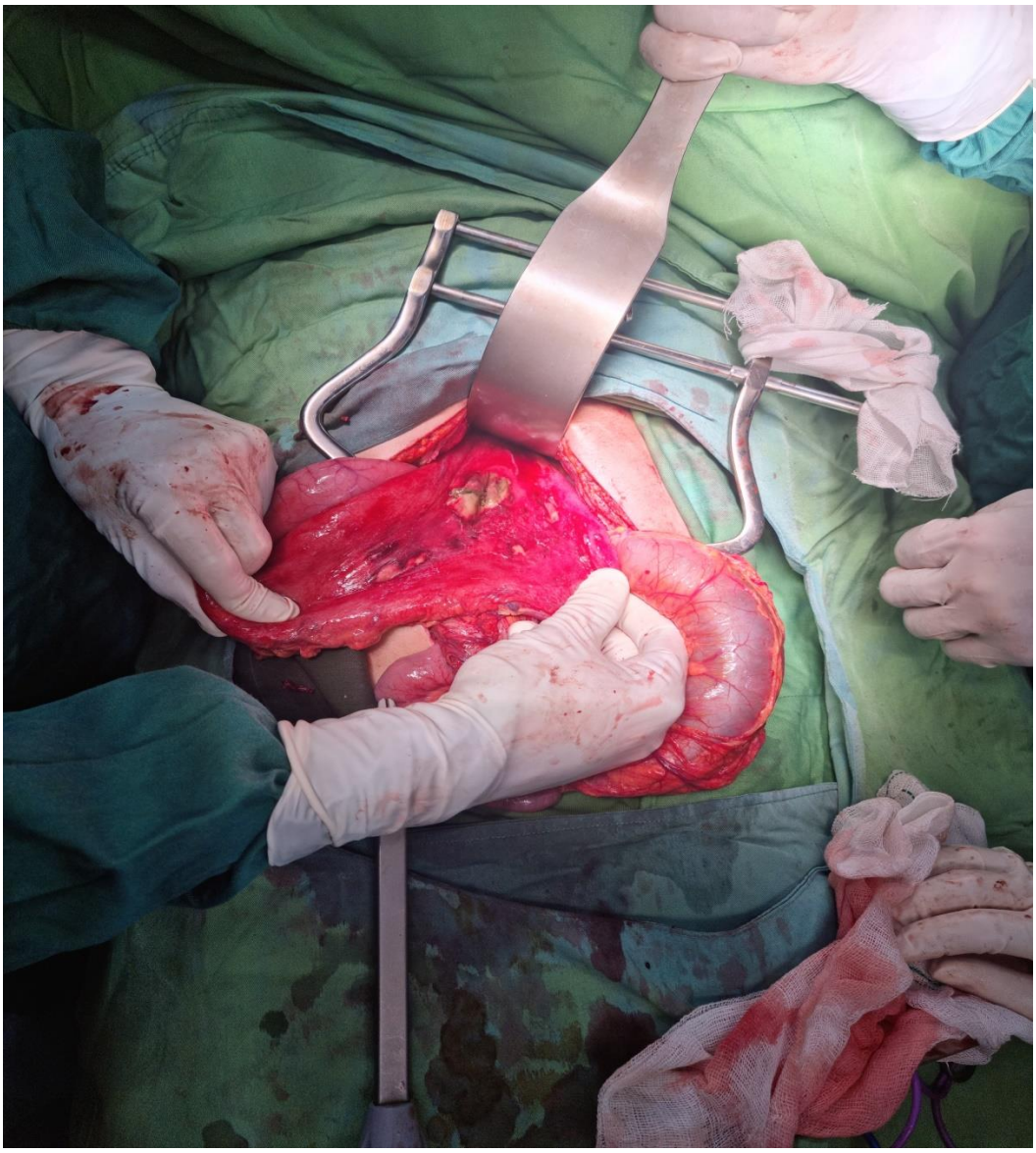

Figure 3: operative finding revealed gastric necrosis

Figure 4: Stomach after total gastrectomy

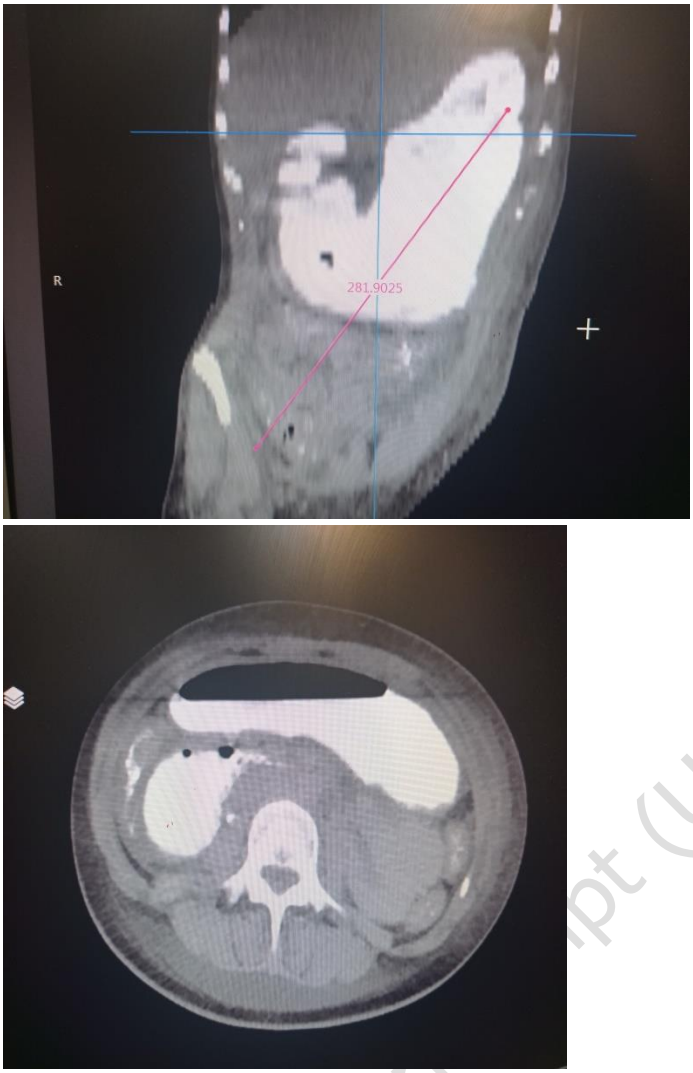

Figure 2:dilated stomach in ct

Discussion

Diacetylmorphine, which is known as heroin is derived from the opium poppy plant. it is two or four times as potent as morphine and is synthetically derived from the morphine alkaloid in opium [10] .

Heroin Overdose is a significant cause of death among heroine users.it causes more than 100,000 deaths every year all around the world [11]. Heroine overdose mostly happens at home in the company of others and other drugs [1]. Heroin can be is used subcutaneously, intranasally, intramuscularly, and intravenously. During oral

abuse of heroin, it undergoes first-pass metabolism to morphine via deacetylation. unlike intravenous administration, oral ingestion does not cause a rapid onset of effects and is less desirable to users. 6-monoacetylmorphine and morphine activate opioid receptors [12]. It comes to its peak serum level in less than one minute when it is used intravenously, three to five minutes, intranasally and intramuscularly and five to ten minutes subcutaneously[13]. Heroin is a highly lipophilic substance and rapidly crosses the blood-brain barrier. Heroin is the agonist of opioid receptors such as mu, kappa, and delta [14]. It can effect on both Mu receptors, Mu1&Mu2. Its analgesic effect is based on activating Mu1 and the respiratory depression and euphoria is based on Mu2. Activation of Mu2 receptors also causes miosis, reduced gastrointestinal GI motility, and physiologic dependence . It causes some degree of analgesia by activating Kappa receptor. Delta receptors are more involved in spinal analgesia [15, 16]. it also reduces peripheral vascular resistance (resulting in mild hypotension), causes mild vasodilation of the cutaneous blood vessels (resulting in flushing) In the case of a very severe overdose, visceral blood supply is reduced due to severe hypotension On the other hand, with the mechanism of reduce in motility of digestive system, it causes very severe distension of the stomach In the case of severe distension of the stomach and simultaneous drop in blood pressure, mucosal blood supply is disturbed and can cause necrosis. As we mentioned heroin causes decreased GI motility, so it can cause constipation [17, 18].

Opioids can increase the risk of GI dysfunction and they can increase the risk of infection in GI tract [7].In our case ,abuse of heroin caused a gastric dilation and massive gastric necrosis in a 22 years old addict female. As it's proved, gastric dilation is an event which can lead to gastric necrosis but there is no proven pathogenesis. It has several other etiologies such as anorexia nervosa, trauma, diabetes and electrolyte disturbances, which they were all negative in our case [9], [8].

Conclusion:

One of the severe complications of heroin poisoning could be gastric necrosis. with a possible mechanism of hypotension and severe distension that leads to mucosal blood supply disturbance.

Compliance with ethical guidelines:

This article does not contain any interventions on human or animal by any of the authors. In addition, information about the human case study group is anonymous in this study.

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