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CHALLENGES IN THE MANAGEMENT OF A TRAUMA PATIENT WITH ALLEGED ZOLPIDEM OVERDOSE: A CASE REPORT

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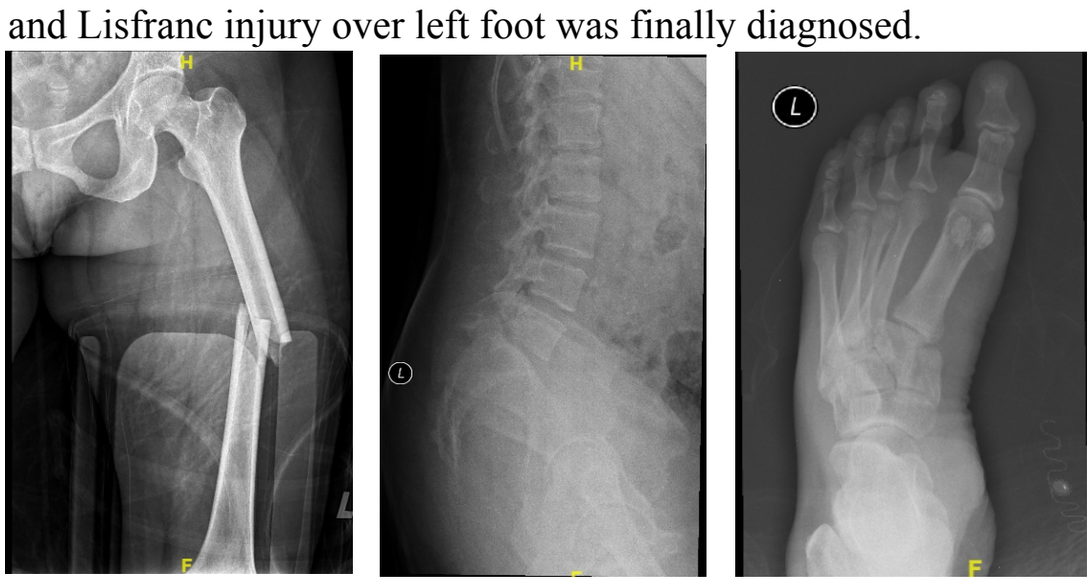
INTRODUCTION

The COVID 19 pandemic has catapulted a rise in suicide cases in Malaysia with a shocking statistics of an average of four suicide cases a day in the first three months of this year alone. Dealing with a suicidal patient poses a threat without an open minded physician. Multidrug overdose ingestion, an uncertain amount and delayed presentation add an extra challenge. A combination of drug overdose and trauma is rare and further complicate the management. The clinical presentation may overlap and difficult to be distinguished. This case report highlighted the challenges in managing this unusual case combination and the danger of missing one or both.

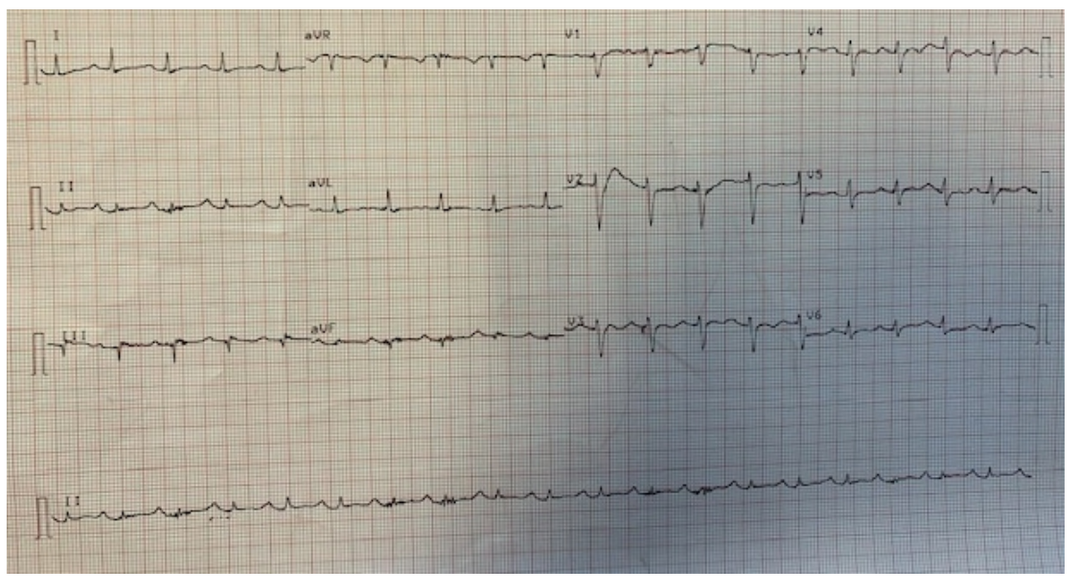
CASE REPORT

A 49 years old lady with major depression disorder was brought to the trauma bay after a fall from a 5-meter height balcony. The trauma survey found no immediate life-threatening injury. Glasgow Coma Scale was E3V4M6. Multiple injury inluding 12th thoracic vertebra compression fracture, left femoral shaft fracture, and Lisfranc injury over left foot was finally diagnosed.



She was hypotensive with BP 90/55mmHg and HR 104bpm with negative FAST and no obvious external bleeding. Her daughter reported the suicidal ingestion of 95 tablets of Zolpidem right before she jumped off.

Presented 2 hours post ingestion, gastric lavage was not offered. GCS worsened 8 hours later to E1V1M5 with a Richmond Agitation-Sedation Scale from -1 to -4 without signs of raised intracranial pressure, hence intubated for airway protection. Plain CT brain showed no haemorrhage.



Electrocardiogram showed prolonged QT interval (503msecs) with hypomagnesiumia 0.75mmol/L which was treated with 20mmol/L intravenous magnesium sulphate. Elevated liver enzymes aspartate transaminase and alanine transaminase with preserved liver function was observed. Repeated Focused Assessment with Sonography for Trauma was negative and Haemoglobin was 12.2g/dL. She was on ventilatory support for 2 days and open reduction internal fixation was performed for her femur fracture and Lisfranc injury.

DISCUSSION

Altered Mental Status

Zolpidem is a nonbenzodiazepine sedative-hyponotics of imidazopyridine class used to treat insomnia[1]. They are believed to have similar agonistic binding to the benzodiazepine receptor on central GABA receptor[1]. In massive overdose, coma and respiratory suppression are possible. However, fatalities are rare and usually occur with co-ingestion of other drugs[1]. Studies have shown that intoxicating substances can confound GCS assessment in trauma patients[2]. Therefore, in the setting of trauma with concurrent CNS depressant toxicity, clinician must be very vigilant. These 2 pathologies prerequisite CT brain imaging to delineate one etiology from another. This is illustrated in a study that showed that the prevalence of clinically important injury in intoxicated patients with minor head injury was significant[3]. Therefore, we can see that all clinical decision rule such as NEXUS and Canadian CT head rule agree in advocating advanced imaging for intoxicated patient with poor mentation.

Hypotension

In the event of overdose, toxicity from acute zolpidem overdose is believed to be mimicking benzodiazepine although markedly less pronounced, which results in a typical sedative-hyponotic toxidrome characterized by depressed level of consciousness, respiratory depression, hyporeflexia, and possibly hypotension and bradycardia[4] due to decreased in sympathetic tone. In a phase IV clinical study, hypotension is found among people who take Zolpidem, especially people who are female, above 60 years old, and have been taking the drug for less than a month[5]. With the combination of trauma, any hypotension warrant an exclusion of haemorrhagic shock before blaming the drug. In this case, trauma survey revealed a closed fracture midshaft left femur. Long bone fractures have been reported to be associated with substantial amount of blood loss, estimated about 1000-1500mls, sometimes requiring blood transfusion. This may explain her initial hypotension and tachycardia which responded with fluid resuscitation. Moreover, as patient fall from height, the possibility of spinal cord injury and neurogenic shock have to be considered. In this case, a T12 compression fracture was beyond the location of sympathetic chain which may attribute to neurogenic shock. Furthermore, no neurological deficit elicited.

Prolonged QT interval

Studies have shown that zolpidem inhibits hERG potassium channels and prolongs action potential duration in human induced pluripotent stem cell-derived cardiomyocytes, increasing the risk of long QT syndrome[6]. Nevertheless, other differential of prolonged QT interval needs to be considered and ruled out for example electrolyte imbalances, myocardial ischemia from cardiac contusion, and the possibility of co-ingestion with other drug induced prolonged QT. Moreover, studies have shown that traumatic spontaneous subarachnoid haemorrhage is a common cause of an acquired prolonged QTc syndrome[7]. In this case, her CT brain was normal. Her magnesium level was low (0.75mmol/L) and the QTc (503msecs) normalized after infusion of 2g MgSO4.

Elevated liver enzymes

Zolpidem toxicity rarely cause liver injury; hence our focus was on ruling out traumatic liver injury and other co-ingestion of hepatotoxic drug like Paracetamol. As for traumatic liver injury, multiple studies have investigated the role of liver enzymes in patients with blunt abdominal trauma to diagnose liver injury[8] with optimal cut off value of AST and ALT ≥ 106 U/L and 80 U/L[8] respectively. As for paracetamol co-ingestion, her 4-hour paracetamol level was 4 umol/L and it was below the treatment level based on Rummack Matthew nomogram.

CONCLUSION

In conclusion, clinicians must remain aware of the possibility of other differential diagnoses in the approach of trauma with zolpidem overdose due to the potential overlapping features of both clinical presentation. While zolpidem is treated supportively and usually self limiting, missing traumatic haemorrhage and brain injury could be catastrophic.

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