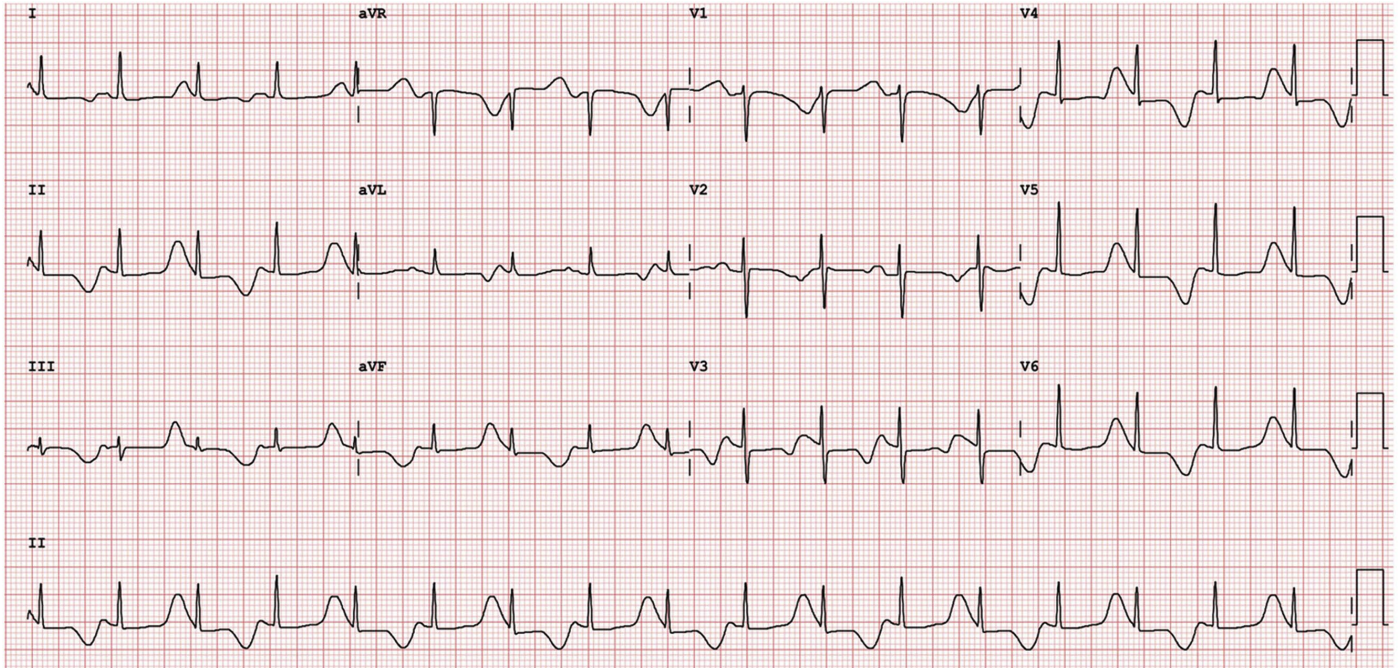


Question 1

A 52-year-old woman was gasping for air in the resuscitation bay. Cardiopulmonary resuscitation with endotracheal intubation was initiated immediately. She was then treated for Torsade de Pointes. Her blood pressure was 102/62 mm Hg, pulse rate was 84 beats/min, and SaO₂ was 98% after resuscitation. The systemic examination was unremarkable. Routine laboratory investigations, including cardiac enzymes and serum electrolytes, were within normal limits. A postcardioversion 12-lead ECG was performed.



(a) Identify 3 abnormalities in this 12-lead ECG. (3)

- markedly prolonged QT interval
- giant T waves with an alternating axis
- small, positive P wave deflection

(b) Diagnose this condition. (2)

Long QT syndrome with macroscopic T wave alternans (TWA)

(c) Further history did not reveal any history of chest pain, drug intake, or fever. Name ONE more history specific to this ECG condition. (2)

A family history of sudden cardiac death.

(d) Name TWO investigation (2)

- Transthoracic Echo (for structural heart abnormality)
- Serum electrolyte (potassium, magnesium, and calcium)

(e) List TWO treatment available for this condition.

- β -adrenergic blocker (Propranolol, Nadolol, Metoprolol or Atenolol)
- automatic implantable cardiac defibrillator implantation

Question 2

A 49-year-old man presented to the emergency department (ED) with cyanosis and altered mental status. Emergency medical services reported that he was found unresponsive at a bar, hypotensive and hypoxic to 88%. In the ED, he remained confused and cyanotic. His blood pressure was 100/61, pulse 131 bpm; and SpO₂ 81%. He stated he “meant to drink [his] a drink, but drank the wrong bottle” (figure 2a). Cardiovascular examination was normal otherwise. The duty physician took arterial blood for blood gas analysis (figure 2b).



(Figure 2a)



(Figure 2b)

(a) Identify the abnormality of blood sample shown in Figure 2b. (1)

Methaemoglobinemia

(b) Name the toxic agent contributing to the pathology. (1) Explain the pathophysiology. (3)

Amyl nitrite.

- Amyl nitrite oxidizes hemoglobin to methemoglobin,
- which has decreased oxygen-carrying capacity and
- diminished oxygen offloading to tissues

(c) Name two non-medical effects of the agent stated in (b). (2)

- intoxication
- sexual enhancement

(d) State the specific treatment (1) and its dose (1) for this condition.

- Methylene blue
- 2mg / kg

(e) In addition to drinks (figure 2a), name a known food source of this agent.

Food preservative

Question 3

A 28-year-old woman was brought into the emergency department (ED) for unresponsiveness after she had suffered an apparent seizure at a party. In the ED, the patient had a blood pressure of 153/83 mm Hg, a pulse rate of 147 beats/min, and an O₂ saturation of 84% on room air. She was lethargic but had no focal neurological deficits. Her urine toxicology screen was negative for benzodiazepines, barbiturates, cocaine, opiates, and methadone. She had initially Chest X-ray and then Computed tomography of the abdomen (figure 3a & 3b).

5



Figure 3a

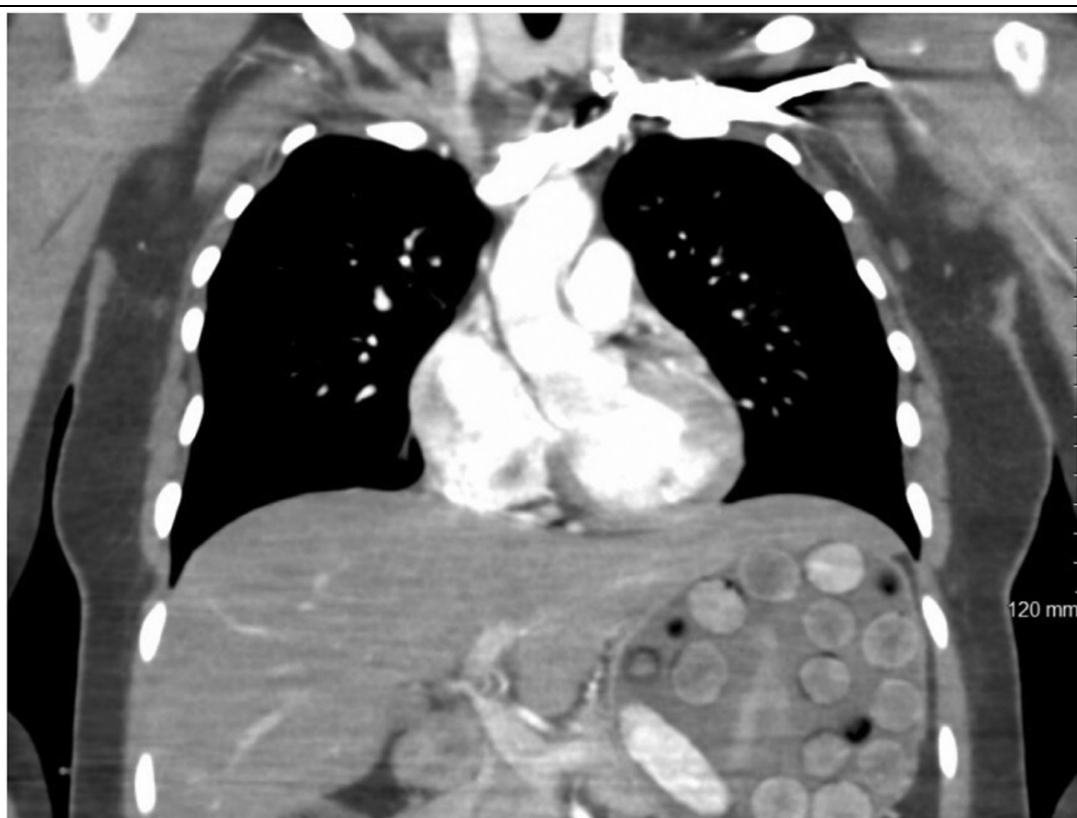


Figure 3b

(a) State and explain any radiological abnormality in Figure 3a & 3b. (1)
<ul style="list-style-type: none"> multiple foreign bodies of various attenuations and sizes in the stomach
(b) Name TWO causative agents in this condition. (2)
<ul style="list-style-type: none"> cocaine
<ul style="list-style-type: none"> heroin
(c) Name three lethal complications in her condition if treatment not successful. (3)
<ul style="list-style-type: none"> hyperthermia
<ul style="list-style-type: none"> hypertensive emergency
<ul style="list-style-type: none"> cardiac arrhythmia
(d) Name three complications which surgery is indicated. (3)
<ul style="list-style-type: none"> Intestinal obstruction
<ul style="list-style-type: none"> Bowel perforation
<ul style="list-style-type: none"> Signs of cocaine intoxication
(e) Name one abnormal physical finding associated with this condition at triage. (1)
<ul style="list-style-type: none"> hyperthermia

Question 4

A 8-year-old boy was brought to ED by his mother for persistent right little finger swelling for 2 week after an injury during a football game. Otherwise, he was well. A set of radiographs was taken as below.



(a) Describe the radiograph. (3)

- Mildly displaced (rotated) phalangeal neck fracture
- Type II
- Proximal phalange of the right little finger
- Partially healed

(b) Give account to his management. (4)

- Buddy taping and
- Early mobilization.
- The risk of devascularization of the phalangeal head if operated on delayed fracture.

- Closed treatment in a cast resulted in some remodeling even 3 weeks.

(c) Indication of operative management for this injury. (3)

- Early presentation

- Neurovascular compromise

- malunion

Question 5

A 25-year-old woman was involved in a motor traffic accident at somewhere 1 hour-drive away from the ED. She is 32 week pregnant and has rib tenderness, for which she has received analgesia in the first hospital, from which she was sent to you for further care. Her blood pressure was 115/60, pulse 85. Her abdomen was soft without tenderness on examination. She has been given supplementary oxygen with a mask. Assume atmospheric pressure is 760mmHg, and the FiO₂ is 50%, her arterial blood gas and electrolytes are as follows:

ACID / BASE 37.0 °C
pH 7.32
pCO₂ 42 mmHg
pO₂ 150 mmHg
HCO₃⁻act 21.3 mmol/L
BE(B) -5.8 mmol/L

(a) Describe the acid-base status. (1)

- Acute respiratory acidosis

(b) Explain the acid-base status. (4)

- At 32 weeks' pregnancy the normal PaCO₂ is 30mmHg (1) with compensatory HCO₃⁻ reduction (1).
- Acute CO₂ retention due to pain (1) and narcotics (1)

(c) Calculate and interpret the A-a gradient. (5)

- Raised A-a gradient 154 mmHg
- Suggesting shunt and/or V/Q mismatch
- Possibly: further loss of FRC due to chest wall injury (already loss of 500ml in the third trimester)
- Possibly: pulmonary contusion
- Possibly: Pneumothorax