QUIZ 19th Sept 2018 (answers below)

1. **What are the determinants of cardiac output?**

2. **Outline the physiology behind your management of cardiogenic pulmonary oedema.**

3. **What is the normal size of adult kidneys on ultrasound?**

4. **What is the normal gallbladder wall thickness and common bile duct diameter on ultrasound?**

5. **Describe and interpret the following ECG.**

123 . Age not entered, assumed to be 50 years old for purpose of ECG interpretation
488 . Sinus tachycardia . . . . . rate> 99
102 . RBBB and LPFB . . . . . .QRSd >120mS, axis(90,210)
D 183 . ST depression, consider ischemia, diffuse lds . . . . .ST <-0.10mV, ant/lat/inf
446
639

Room: RESUS 2

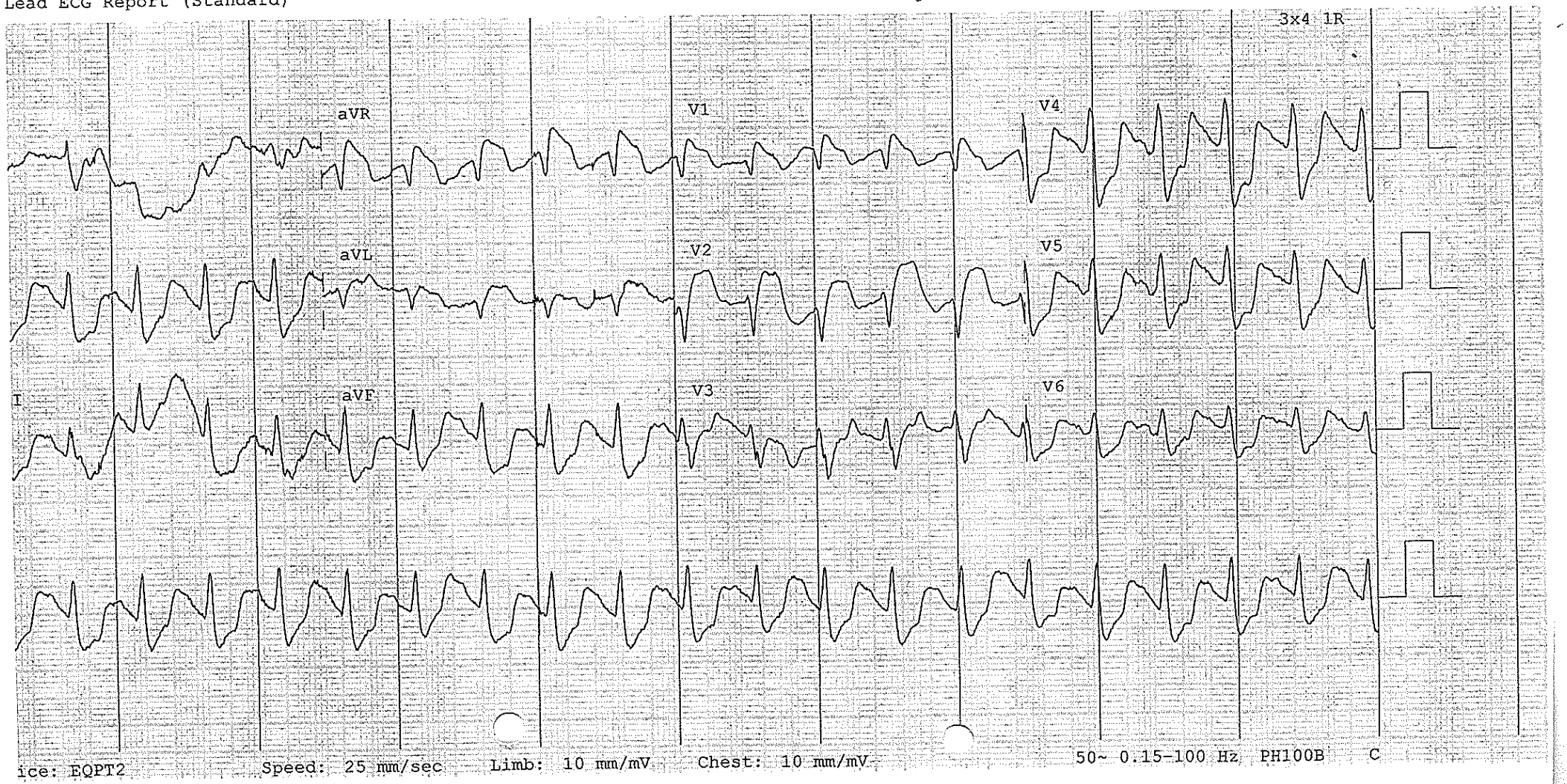
1

XIS--
0
126
57

- ABNORMAL ECG -

Lead ECG Report (Standard)

Unconfirmed Diagnosis



QUIZ answers 19th Sept 2018

1. **What are the determinants of cardiac output?**

   Cardiac output = Heart rate x Stroke volume
   Stroke volume is determined by Contractility, Preload and Afterload

2. **Outline the physiology behind your management of cardiogenic pulmonary oedema.**

- *Positive pressure ventilation*
  - *Non invasive ventilation is usually appropriate, but may need invasive*
  - *Improves oxygenation*
    - *Can deliver up to 100% oxygen*
    - *Increasing end expiratory pressure enlarges alveolar surface area for gas exchange throughout respiratory cycle*
    - *Better myocardial oxygenation improves contractility*
  - *Positive intrathoracic pressure*
    - *Reduces preload*
    - *Reduces afterload (as intrathoracic pressure is higher relative to peripheral pressure) which increases stroke volume*
  - *Inspiratory pressure can be titrated to adequate tidal volume to normalise pCO_2*
  - *Reduces work of breathing which in turn reduces oxygen consumption and hence reduces demand on the heart*

- *GTN*
  - *Vasodilation reduces preload and afterload without increasing myocardial oxygen requirement*
  - *Coronary artery vasodilation improves myocardial oxygenation*

- *Inotropes*
  - *Unfortunately all inotropes increase myocardial oxygen demand*
  - *Dobutamine is often inotrope of choice as selective β1 agonist with minimal β2 or α1 effects, so increases contractility while causing some vasodilation*

- *Intra-aortic balloon pump*
  - *Reduces afterload and increases coronary artery perfusion pressure*

- *Treat cause of pump failure*
  Eg: Reperfusion for AMI, Arrhythmia management, Urgent valve repair, Toxicology management

- *Diuretics*
  - *Only if total body fluid overload present*
  - *Should only be used with vasodilation as otherwise the diuretic inducted reduction in intravascular volume will cause vasoconstriction and hence an increase in afterload.*

3. **What is the normal size of adult kidneys on ultrasound?**

Length 9-13cm in females, 10 – 14cm in males
Width 3-5cm
Left kidney usually slightly larger than the right
Kidney size also increases with increasing height and BMI
Kidney size decreases with age

4. **What is the normal gallbladder wall thickness and common bile duct diameter on ultrasound?**

Gallbladder wall should be <3mm

Common bile duct is normally <6mm
Diameter increases cholecystectomy – can be up to 8mm
Diameter increases age – can be up to 10mm in elderly

5. **Describe and interpret the following ECG.**

Rate	*125/min Regular*
P waves	*Very small and flat*
PR interval	*Normal range at 0.16sec*
QRS	*Broad complexes* *Right axis deviation – 120 degrees* *Dominant R wave in aVR*
ST	*Looks like ST elevation aVR, aVL, V1, V2 with depression* *Difficult to tell where QRS ends and ST segment begins*
T waves	*Prominent T waves V3,4* *T waves starting to merge with the QRS complexes*

**As per guru Mattu - wide bizarre appearance – always consider toxic and metabolic*

➔ *K 9.2mmol/L*

Young man post oxycontin overdose with a long lie
Compartment syndromes in upper limbs and a thigh requiring fasciotomies
CK peaked at 145,000
UDS negative for tricyclics.