Question 1 ~~(21 marks~~) 19 marks - 9 minutes

You are a consultant in charge in a tertiary emergency department at 2300 hrs. You overhear a junior medical officer- who recently commenced night shift- asking a nursing staff member to arrange the discharge of a 72 year-old man, whom he has diagnosed with renal calculi. Nursing staff express their concerns with you as they state that the patient has ongoing right sided abdominal pain. You have not worked with the medical officer before.

1. State five steps (5) that you would take in this circumstance. (5 marks)

- Introduce yourself to MO as consultant in charge (if the JMO doesn't already know this)
- Ask for clarification of case in terms of RN concern
- Personally review the patient – history and examination
- Bedside AAA ultrasound scan
- Arrange CT scan if one has not been performed if patient is hemodynamically stable
- Analgesia – titrate small doses e.g. 1-2 mg morphine IV according to haemodynamic stability
- Notify Vascular Surgery that you have a patient who may have a leaking AAA
- Discuss with / educate JMO (after the appropriate management has occurred) re: renal colic mimics.

The major concern in this scenario is whether or not this patient has a leaking AAA which MUST be excluded. A leaking AAA can mimic renal colic.

This question is not a quality assurance question or checking on the JMO's well-being.

1. State five (5) limitations to the performance of bedside ultrasound for this patient. (5 marks)

- **Bowel gas**
- **Body habitus**
- **Operator inexperience**
- **Cannot reliably diagnose rupture**
- **Aneurysm may be an incidental finding/ not the cause of the patients symptoms**
- **May not scan the whole aorta and miss part of it**
- **Pain may preclude adequate assessment**
- **Mistaking IVC / Superior mesenteric artery for aorta**
- **Measuring lumen without including mural thrombus**
- **Fluid type cannot be differentiated. i.e. whether it is blood vs ascites**

Some candidates mentioned negatives e.g. no free fluid seen. This is not a limitation.

1. State ~~four (4)~~ two (2) ultrasound features that are consistent with AAA rupture. (4 marks)

The answers listed below found in Dunn's text book I have altered this to 2 marks. The rationale for this, is that most Emergency Physicians would not know this nor would they be able to scan a patient and reliably identify them. I think many of these findings are only something that experienced Radiologists / Sonographers will be to find.

- **Retroperitoneal haematoma**
- **Hypoechoic areas within the thrombus**
- **Abrupt interruption of the thrombus**
- **Floating thrombus**
- **Break in the aortic wall**

The answers that I also accepted were:

- Free fluid in the Abdomen
- AAA size > 5 cm

I appreciate that AAA size> 5 cm may not necessarily indicate rupture but the risk is higher. I think these latter 2 answers are something that I believe Emergency Physicians should be able to find when examining a patient for an AAA whilst doing an ED ultrasound.

1. State ~~three (3)~~ two (2) abnormal findings in this CT scan. (~~3 marks~~) (2 marks)

- **6 cm AAA**
- **Mural thrombus**
- **Horseshoe kidney**

NB: no evidence of rupture/ imminent rupture

These are the 3 abnormal findings. The only ones that I expected were the first two. Candidates had to give the size of the aneurysm. I accepted between 5 to 6 cm. There is a ruler on the scan image. The horseshoe kidney is an incidental finding that would be very difficult for an Emergency Physician to diagnose in this scenario as it is unexpected and probably not of relevance to the Emergency Physician who is treating the patient. It obviously has more relevance to the Vascular Surgeon who will operate on the patient.

His vital signs post CT are as follows (he has not received fluid intravenously)
BP 80/40 mmHg PR 90/min RR 16 /min O2 Saturation 98% on room air Temp 37.5°C

1. What is your approach to his fluid resuscitation? State four (4) points in you answer.(4 marks)

- **Hypotensive resuscitation/ permissive hypotension/ minimal volume normotension**
- **Only enough to restore vital signs**
- **Do not attempt normovolaemia**
- **Aim systolic BP > 90 mmHg**
- **Cross matching 6 units blood / Activation of MTP** (only one of these not both was accepted if written on different lines)
- **2 large bore (16 G or bigger) IV access**

The aim is to contact the Vascular surgeons and get the patient to theatre immediately. As the patient is tamponading the leaking AAA with their abdominal wall muscles, aggressive fluid resuscitation must be avoided. Ideally any fluid (particularly aggressive resuscitation) should be given to the patient as soon as the patient is anaesthetised (when his abdominal muscles relax and stop tamponading his leaking AAA)

I think the question may have been confusing and perhaps if asked again would be better broken up into 2 separate questions:

- 1) What is the principle of your approach to his fluid resuscitation?
- Answer: **Hypotensive resuscitation/ permissive hypotension/ minimal volume normotension**

- 2) List 4 steps in your management of his initial fluid resuscitation:
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- 2 large bore (16 G or bigger) IV access
- Cross matching 6 units blood / Activation of MTP
- Small Normal saline bolus e.g. 250 to 500 ml at a time aiming for BP 90 mmHg systolic
- Commence transfusion (O neg if group specific blood / fully cross matched blood is not available) after 1-2 litres of crystalloid given to maintain BP at 90 mmHg systolic
- Urgent referral to Vascular Surgery and transfer to operating theatre for definitive surgery
- Aggressive fluid resuscitation once anaesthetised and abdominal wall muscles are no longer tamponading the bleeding.

General Points:

1) One answer per line
2) If you give more than one, the second one will most likely be ignored or one of your later answers may be ignored
3) Answer at a level of a consultant. E.g. if the answer requires giving the patient analgesia, state what you would give and how e.g. morphine titrated in 1-2 mg increments until pain relieved, monitoring haemodynamics.
4) Read the question and answer the question you were asked, not the one you wished you were asked.
5) Answers must have consultant perspective. Give answers that are most likely or must be excluded as they are life threatening e.g. in lists of differentials don't write obscure differentials that would be an extremely rate cause of the scenario
6) Don't write the same thing reworded in another way on a separate line – I found that many of you did this for the first question in this multipart question.