CHAPTER OVERVIEW - LOIN/BACK PAIN

Be cautius when assessing back pain.

Often its secondary to a Urological or Musculoskeletal cause however, sometimes and more commonly in men who smoke, It may well be a ruptured AAA. They CAN be haemodynamically stable, there's lots of space in the retroperitoneum for the blood to accumulate. Check femoral pulses and feel for a mass on abdominal examination. Check for signs of acute limb ischaemia - aneurysms can thrombose and embolize.

Think fast, contact vascular reg, NOW!

CLICKABLE Calculators

SOFA - Sequential Organ Failure Assessment score

SHOCK INDEX

Flank/Back Pain +/-

1. Male + Smoker + HyPERtension – Think **AAA**
2. L.U.T.S +/- Fever/Vomiting – Think **Urological emergencies**

Examination:
General + Abdominal
Vascular examination

Relevant Findings:
- Variation in femoral pulses
- Flank percussion tenderness = Peritonism

Observations/NEWS
(**q-SOFA** sepsis criteria)

Q-SOFA Sepsis Criteria
- ❑ SBP < 100 mmHg
- ❑ GCS < 15
- ❑ RR > 22/minute

If 2/3 of the above present = SEPSIS

Investigations:
1. **Bloods**: FBC, U&E, LFT, ABG, Coagulation screen, G&S
2. **Urine Dip + Beta HCG**
3. Bladder scan

BP > 180 systolic OR HyPOtensive + Tachycardic/Variation in Femoral Pulses

YES - Urgent senior review

1. NBM + IV Fluids (see NICE guidelines)
2. Regular Paracetamol + Opiate and PRN Morphine + Antiemetic
3. IV Antibiotics if septic/ deranged inflammatory markers*
4. Stop Anticoagulants if bleeding/Abnormal Coagulation
5. Follow AKI bundle if AKI**
6. Blood transfusion (PRBC +/- FFP)^

While awaiting senior review – DO THIS..

NO - Review on ward round

1. Orally Sips only
2. AKI - IV fluids + medication review **
3. Regular Paracetamol + Opiate and PRN Morphine + Antiemetic
4. VTE Prophylaxis

Fluid Guidelines

AKI Guidelines

* Refer to trust guidelines for choice of antibiotics
** Refer to trust AKI guidelines
^ Only after senior review and discussion

ABDOMINAL AORTIC ANEURYSM

It is a permanent abnormal dialatation of the infra-renal aorta of more than 50% of its diameter. (>3cm)

REMEMBER - 75% of patients with ruptured AAA die before reaching the hospital !

Most common cause of AAA is Atherosclerosis therefore, the risk factors are similar -

1. MODIFIABLE

- Smoking
- Hypertension
- High Cholesterol
- Obesity

2. NON-MODIFIABLE

- Male : Female ration (6:1)
- Age (Odds Ratio 2.76 at 55yrs and 28.37 at 80yrs)
- Family History
- Ethnicity
- Known coronary artery disease/ P.V.D/ carotid stenosis/ CVA

Presentation -

1. 75% Asymptomatic/ Incidental finding on imaging
2. Symptomatic

- Back/Loin pain
- Pulsatile, expainding abdominal mass
- Acute limb ischaemia (Thromboembolic phenomena originating in aneurysmal sac)

On examination you may, in a thin patient find a palpable, pulsatile, tender abdominal mass. There may be discrepancy between the radial and femoral pulses. Remember, with rupture, the patients present with variable degrees of haemorrhagic shock.

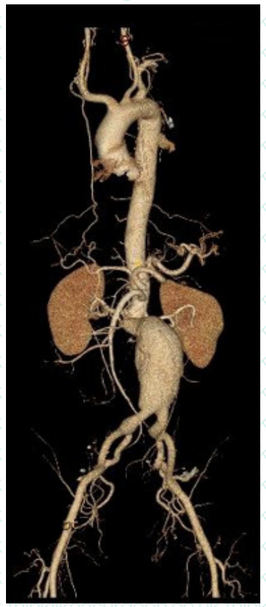

Image: Arterial Reconstruction of an Infra Renal AAA (Case courtesy of Dr Hani Makky ALSALAM, Radiopaedia.org, rID 8190)

Investigation of choice -

- CT Aortic angiogram
- FAST scan in A&E
- Digital substraction Angiography (DSA)

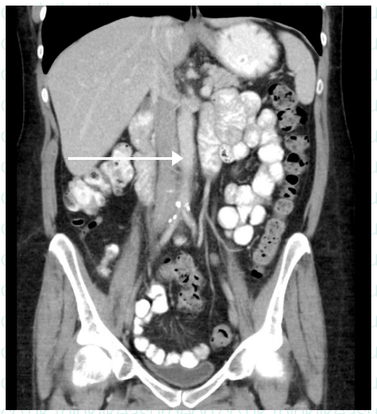

Image: Left - Arrow at Normal abdominal Aorta (Case courtesy of Dr Andrew Dixon, Radiopaedia.org, rID 36677) and **Right** - Arrow at Ruptured AAA (Case courtesy of Radswiki, Radiopaedia.org, rID 11149)

Complications - May need HDU/ITU escalation

1. RUPTURE

- 80% - Retroperitoneal
- 15% - Intra-peritoneal (catastrophic, high mortality becuase lots of space for blood to accumulate and no pressure!)

2. Embolic phenomena - Renal failure, Acute limb ischaemia
3. Pseudoaneurysm from chronic sustained leaks
4. Aortic fistulas

MANAGEMENT of ABDOMINAL AORTIC ANEURYSM

ASYMPTOMATIC

1. **Watchful** Management
   - 3-4.4cm: Yearly vascular ultrasound
   - 4.5 - 5.4cm: 3-monthly vascular ultrasound
   - Risk reduction
     - Smoking cessation
     - Improve blood pressure control
     - Statin and aspirin
     - Weight loss
2. **Surgical** Intervention – OPEN or E.V.A.R
   - AAA >5.5cm, expanding at >1cm/year
   - Symptomatic AAA in a fit patient
   - Even in unfit patients, consider repair if >6cm

SYMPTOMATIC

1. Inform a VASCULAR REGISTRAR immediately. Remember, these patients die, quickly. The theatre team, Anesthetists and critical care team need to know ASAP.
2. Quick A → E Assessment

- Start I.V Fluids (Permissive HyPOtension to be aimed)
- Start oxygen inhalation to maintain SpO^2 >95%
- Take bloods (FBC, U&E, Coagulation, LFTs, G&S, Lactate – ABG)
- Inform Blood transfusion service ASAP, Cross Match 6 units of P.R.B.C (Packed red blood cells)
- Keep patient fasting (In case of theatre)

Flowchart: Management of Abdominal Aortic Aneurysm based on size and presentation

WORTH A READ - NICE

Radiopaedia

AN INTERESTING CASE

UROLOGICAL EMERGENCIES

UROLITHIASIS -

Symptomatology of urinary tract stones depends on their location, size and associated infection.

Risk factors associated are:

1. General factors
- Childhood onset of stone formation
- Family history
- Solitary kidney (Stone recurrence PREVENTION is key)

2. Stone forming diseases
- Hyperparathyroidism

3. Genetic conditions

4. Drug induced stone formation

5. Anatomical and environmental risks

Presentation - Flank pain, Loin to groin pain

Investigation of choice -

- Ultrasound KUB
- CT KUB (Non-contrast)
- Bloods - FBC, U&E, Electrolytes (Ca, Mg & PO4), Uric acid, CRP, Coagulation
- Urine dip + Culture (ALWAYS)
- Intravenous Urogram (IVU) if anatomy needs to be assessed for surgery

Management -

1. **Renal colic**
- Analgesia - NSAIDs
- If analgesic refractory - Renal decompressions or ureteroscopic stone removal
- If infected, obstructed kidney- Antibiotics and renal decompression

2. **Ureteric stones**
- Analgesia - NSAIDs
- If infected, obstructed kidney- Antibiotics and renal decompression
- Small stone - observe and review
- Stone removal - URS (Ureterorenoscopy) > SWL (Shock wave lithotripsy)

3. **Preventative measures**
- Fluid intake (2.5-3L/day)
- Nutritional advice - balanced diet
- Weight loss (aim normal BMI)

Image: Distal left ureteric stone causing upstream dilatation. (Case courtesy of Dr Roberto Schubert, Radiopaedia.org, rID: 16407)

The Struvite/Renal pelvis stone: Large stone formed over a long period and takes the shape of the renal pelvis.
Treatment - Surgical removal

The Ureteric stone: These are often in transition from the the renal pelvis and present as a colic. Failure to pass causes hydroureter and hydronephrosis.

The bladder stone: Rarely symptomatic but large stones can cause lower abdominal pain and recurrent UTI's.

Illustration: Different levels and types of stones with their presentation

PYELONEPHRITIS -

Uncomplicated - pyelonephritis in non pregnant, non-menopausal women
- **Investigation** - Urine analysis, urine culture & sensitivities and routine bloods
- **Management** - Intravenous or oral antibiotics (Based on trust formulary)

Complicated - Infection that is difficult to eradicate.
- **Risk factors** - Host factors (Diabetes or immunosuppression) or due to abnormal anatomy or function of the urinary tract (obstruction)
- **Investigation** - Urine analysis, urine culture & sensitivities and routine bloods. Consider CT KUB to look for obstruction/abscess formation
- **Management** - Intravenous or oral antibiotics (based on trust formulary) and management of urological abnormality/decompression if obstructed

Associated with urosepsis (Defined as a life threatening organ dysfunction caused by a dysregulated host response to infection from the urinary tract and/or male genital organs)
- Quick SOFA score + sepsis 6 investigation
- **Investigation** - Urine cultures & sensitivities and CT KUB to look for obstruction/abscess formation
- **Management** - Intravenous antibiotics + source control (removal of stone/ decompression/ drainage of abscess

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- Türk C, Petrik A, Neisius A, Seitz C, Skolarikos A, Thomas K, et al. EAU GUIDELINES ON UROLITHIASIS Risk groups for stone formation.
- EAU GUIDELINES ON UROLOGICAL INFECTIONS.

Acknowledgement:

- **Mr Graeme Guthrie** F.R.C.S (Vascular Surgery) – We are grateful to Mr Guthrie for taking the time to review the section on 'Abdominal Aortic Aneurysms'.
- **Radiopedia** – A big 'thanks' to the best radiology reference website for permitting us to link to their resources and cases. Without their valuable input, this book would be incomplete. If you wish to sign up (for free), please go to https://radiopaedia.org/?lang=gb
- **Radiology Masterclass** – A high-quality, world-class educational service providing free access to radiological tutorials. They also offer courses that cover the undergraduate imaging curriculum as specified by the Royal College of Radiologists. We have linked to a few of their courses throughout our book. If you want to further your radiological skills or get a certificate (for your portfolio) and CPD points, be sure to explore their website https://www.radiologymasterclass.co.uk/