PRE-ANAESTHETIC ASSESSMENT

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Pre-anaesthetic assessment

Objectives

- Medical assessment
- Optimise conditions for anaesthesia and surgery
- Plan appropriate anaesthetic
- Organise relevant investigations
- Explain plans to patient including pre-op preparation, post op care, analgesia
- Plan post op disposal
- Informed consent medical/financial
- Opportunity to ask and answer questions
- Procedural anaesthetist should be involved
- Open lines of communication

Difficulties

- Pre-op anaesthetic clinics
- Different people may be involved over time
- Time pressures
- Emergency surgery
- Day surgery

FASTING

WHY FAST?

- To reduce the risk of regurgitation of gastric contents
- The values of gastric volume and gastric pH at which patients are at increased risk of aspiration is unclear
- 1974 Roberts et al set values of pH<2.5 and volume >0.4ml/kg based on unpublished studies on monkeys
- Human studies on the exact volume and pH required to cause an aspiration syndrome will obviously never be done

Nil by mouth

- Has evolved to become NBM from 2400 for morning lists and light breakfast for afternoon lists
- Easy to explain to patients
- Variable levels of compliance
- Allows for flexibility in op list
- Often patients fast longer than this
Light breakfast

Actually we mean tea and a bit of toast....

The evidence for fasting

- Too many studies to mention
- As the incidence of regurgitation is rare the size of a trial required to demonstrate the safety of a particular regimen would be huge
- Measures of risk: gastric volume and pH, dye markers, patients’ perception of hunger, thirst, anxiety, vomiting etc

Cochrane Review 2003

- What is the optimum duration of a fast?
- If intake permitted during fast what is the optimum type of intake permitted?
- If intake permitted during fast what is the optimum volume of intake permitted
- What is the optimum preop fasting regime for patients at increased risk of regurgitation/aspiration

Current Guidelines

- Clear fluids 2hrs
- Breast milk 4hrs
- Solids and formula 6hrs

Duration of fast - fluids

- Shortened fluid fast (fluid up to 90 mins) vs. standard fast - 2 trials showed no difference in gastric volumes
- Fluid up to 120-180 mins vs. standard fast - 20 trials showed no difference in gastric volume
- Similarly no difference in gastric pH

Duration of fast - fluids

- All groups in shortened fluid fast reported lower incidence of thirst and hunger
- One or two studies showed a decrease in anxiety
- No difference in post operative pain scores, nausea and vomiting
Duration of fast - solids
- "Shortened solid fast" vs. standard fast
- All small trials with two intervention arms
- Miles 1983: Tea and toast vs. standard fast (n=40) mean time from meal and induction 240 min - no difference
- Tanabe 1996: Shortened solid fast vs. shortened fluid fast (n=40) no difference in gastric pH and volume
- Also no difference in thirst and hunger scores

Type of permitted intake
- Water vs. standard fast - no difference (n=800)
- Coffee (with milk) - no difference (n=100)
- Water vs. OJ vs. apple juice vs. carbohydrate drink vs. tea - several trials. Overall no difference in gastric volumes. One study (n=60) showed significantly lower intraop pH in patients given a citrus drink

Volume of intake
- What is the optimum fluid intake?
- Comparison of 150 ml vs 400ml vs. unlimited.
- No report of aspiration or regurgitation in any group
- Similar reports of reduction in thirst and hunger
- Patients given large volumes tended to complain

Children
- require adequate hydration to maintain haemodynamic stability during inhalational induction
- Limited glycogen stores to maintain plasma glucose levels while fasting
- Stronger emphasis on patient and parent satisfaction (i.e. a cranky hungry thirsty child is not fun to anaesthetise)

Danger signs
- Trauma
- Ileus/bowel obstruction/pyloric stenosis
- Opioids and anticholinergics
- Emergency surgery
Fasting guidelines
- Clear fluids 2 hrs
- Breast milk 4 hrs
- Formula/light breakfast 6 hrs
- Lipids may take longer than 6 hrs

Patients at risk
- Pregnancy
- Obesity
- Emergency surgery
- Bowel obstruction
- Pyloric stenosis and other gastric outlet obstructions

CARDIAC ASSESSMENT OF PATIENTS PRESENTING FOR NON-CARDIAC SURGERY

Role of guidelines
- Provide a framework for considering cardiac risk of non-cardiac surgery
- Perform an effective evaluation of a patient’s current medical condition
- Choose the most relevant and appropriate investigations and cardiac treatments
- Appropriately evaluate a patient’s risk that then can be used to make treatment decisions

General Approach - assessment should be tailored towards….
- Nature of surgical condition (elective vs. semi-urgent vs. urgent)
- Patient’s risk factors
- Specific surgical considerations
- Pre-op testing should be limited to things that might actually affect patient outcome

ACC/AHA Guideline Update for Perioperative Cardiovascular Evaluation for Non-Cardiac Surgery
Circulation 2002;105:1257-1267
www.circ.ahajournals.org
Assessment

- Stepwise approach looking at
  - Clinical markers
  - Prior coronary evaluation and treatment
  - Functional capacity
  - Surgery-specific risk

Clinical Markers

- Major Predictors of increased perioperative cardiac risk:
  - Recent unstable coronary syndrome, eg acute MI, within 7 days
  - Recent MI (7 days-1 month before surgery)
  - Unstable or severe angina
  - Evidence of a large ischaemic burden by symptoms or non-invasive testing
  - Decompensated heart failure
  - Significant arrhythmias (1° HB, symptomatic arrhythmias, supraventricular arrhythmias with uncontrolled ventricular rate)
  - Severe valvular disease

Clinical Markers

- Intermediate Predictors
  - Mild angina
  - MI > 1 month before surgery
  - Compensated HF
  - Preop creatinine >0.2mg/L
  - Diabetes mellitus

Clinical Markers

- Minor predictors
  - Advanced age
  - Abnormal ECG
  - Rhythm other than sinus
  - Low functional capacity
  - History of stroke
  - Uncontrolled systemic hypertension

Clinical Markers

- Functional Capacity
  - Metabolic Equivalent Levels (METS)
  - 1-4 METS: dressing, walking around the house, washing up
  - 4-10 METS: climb a flight of stairs, walk level ground 6.4km/hr, game of golf
  - Risks increased in people who can’t make 4 METS

Clinical Markers

- Surgery-specific risk
  - Type of surgery itself
  - Degree of haemodynamic stress
    - High risk: Major emergency surgery, major vascular surgery, peripheral vascular surgery, long procedures with anticipated major fluid shifts or blood loss
    - Intermediate risk: intraperitoneal and intrathoracic surgery, CEA, head and neck surgery, ortho surgery, prostate surgery
**Cardiac Risk Stratification**

- High risk >5% (combined incidence of death and MI)
- Intermediate risk <5%
- Low risk <1%

**Urgency of surgery**

- May make the decision easy
- General recommendation for elective surgery is to wait 4-6 weeks after MI

**Recent coronary revascularisation?**

- If the patient has had CABG/stent/angioplasty in the last 5 yrs and no new symptoms -> no further testing usually needed

**Recent invasive coronary evaluation?**

- If this has been done in the last 2 years and symptoms have been stable -> no further testing

**Unstable coronary syndrome or major clinical predictor of risk?**

- If surgery is elective then sort out the cardiac side first
- If surgery is urgent go to theatre and do it post-operatively
Intermediate clinical predictor of risk?
- Consider functional capacity and surgery-specific risks to help stratify risk

Non-invasive testing
- Use the results to determine the need for additional pre-operative investigations
- In some patients the risk of coronary intervention and treatment may outweigh the risk of surgery
- In others it may improve long term prognosis

Other pre-operative tests
- ECG
- Exercise or pharmacological stress testing
- Angiography
- CABG/ revascularisation

CABG
- Generally the indications are the same as for patients not preparing for surgery
- If high / intermediate risk surgery then should undergo CABG prior to elective surgery

Angioplasty / Stents
- Same indications as for those patients not preparing for surgery
- No studies demonstrating better or worse outcome vs. medical therapy
- Requires a delay of surgery
  - 1 week post balloon angioplasty
  - At least 2 weeks and ideally 4-6 post stent for dual platelet poison therapy and allow re-endothelialisation
- Not insignificant risks for these procedures

Perioperative medical therapy
- Still only a few decent trials for beta-blockers
- Continue B-blocker therapy in patients already on them
- If started days or weeks before, aiming at a heart rate 50-60, may reduce risk of MI and death in high risk patients undergoing vascular surgery
- B-blockers are probably recommended for pts undergoing vascular sx and preop assessment identifies CAD or high cardiac risk
Murmurs - general approach
- Have a listen….
- Don’t forget physical examination and history
- Most systolic murmurs reflect blood flow velocity and other physiological changes rather than structural cardiac disease
- Diastolic and continuous murmurs are virtually always pathological

Echocardiography - preop
- YES for diastolic murmurs, continuous murmurs, holosystolic or late systolic murmurs, murmurs with ejection clicks or murmurs that radiate to the neck
- YES for pts with a murmur and signs of heart failure, ischaemia, syncope, IE, or other clinical clues
- YES for an asymptomatic patient with a grade 3 or louder murmur

Echocardiography pre-op
- MAYBE for asymptomatic patients with an abnormal ECG or CXR
- MAYBE if you can’t exclude a cardiac cause by standard evaluation
- NO for a grade 2 or less soft systolic murmur
- Always consider clinical circumstance

85yo female #NOF
- Lives at home, help with the shopping, otherwise independent ADLS
- AMI 7 years prior
- Hypertension controlled on Atenolol
- Systolic ejection murmur O/E
- ECG = TWI, q waves inferior leads
- Fasted since admission 1 day earlier

QUESTIONS?