



## “From the Trough”

### Perioperative Interest Group Notes

Based on Cases discussed at the Weekly PIG Clinical Meeting on 14<sup>th</sup> March 2019. Publication date 18<sup>th</sup> March 2019.

Website: [www.perioptalk.org](http://www.perioptalk.org)

*The imperfect opinions in these reports are only meant to stimulate discussion: - they should not be considered a definitive statement of appropriate standards of care.*

**TOPIC 1:** *76 year old female referred for consultation to assess suitability for anaesthesia. Planned procedure – Cystoscopy +/- Intravesical Botox for incontinence.*

#### **Background:-**

1. Severe COPD – still smoking (>50pk years)
  - FEV1 32% predicted
  - Resting SaO2 85% on room air – awaiting home O2
  - Recent admission to CMH with worsening SOB. Discharged home with oral morphine and Palliative care follow up at home.
2. IHD – AMI 2004. Nil issues since
3. CCF – evidence of RV failure – pedal oedema
4. Depression
5. Social issues
  - Recent home care package expired -difficulty coping at home
  - Husband unwell and limited capacity to provide care
  - Minimal family contacts, and poor mobility meaning limited social contact
  - Recent death of cat (20 years old)

#### **Discussion:-**

- Discussed the patient’s predicted life expectancy. Use of the BODE index for COPD. She scored the highest number, which gives a 18% predicted survival at 4 years.
- Noted the nature of the surgery – elective. Other possible non-surgical therapies – cystoscopy in outpatients or management with incontinence pads
- Suggestion to patient to focus on other stressors affecting QOL. Patient managing Ok with incontinence pads at present.
- Letter sent to referring Dr Re unsuitable for anaesthesia (GA or spinal) for this procedure.

**TOPIC 2:** *75 year old man referred for Ivor Lewis oesophagectomy.*

#### **Background:-**

1. COPD
  - Ex-smoker (ceased 2004). 50 pack years.
  - FEV1/FVC (1.92/4.01L) with significant reversibility
2. Bronchiectasis
3. OSA
  - Diagnosed in 2007. Good CPAP compliance.
4. Follicular centre cell lymphoma
  - Grade 1 disease with mesenteric and para-aortic lymphadenopathy
  - Treatment with PRIMA study initially.

- Recurrence in 2010, treatment with R-CHOP then 2 years rituximab.
- Recent review by Dr Livshin (Taree)

Recent neoadjuvant chemo radiotherapy, with minimal side effects. Has managed to retain weight. ECG NAD, pathology and iron studies normal.

CPET testing showed an anaerobic threshold of 15mL/kg/min. This would classify him at lower risk of post-operative morbidity. However it was noted that his ventilation (as measured by VE/VO<sub>2</sub>) was above the normal range for the entire test. This signifies a likely respiratory limitation to his exercise capacity.

He was advised to start regular bronchodilator therapy and return to physical exercise (was previously riding a bike). His surgery will be in one month.

#### **Discussion:-**

- Does this patient need further non-invasive cardiac stress testing. A part of CPET testing is ECG based stress testing. In this case it was normal at maximum VO<sub>2</sub>. Any further testing will unlikely change his management, so no further testing was ordered.
- Dr Angela Baker our new consultant from Glasgow noted the excellent VO<sub>2</sub> compared with her previous work in Glasgow, where patients were much less active and had additional health problems.

**TOPIC 3:** *71 year old male for laparoscopic right hemicolectomy for caecal colorectal cancer, in a hospital outside JHH. The cancer was discovered on colonoscopy investigating iron deficient anaemia.*

#### **Background:-**

1. Obesity
  - BMI 50
2. OSA
3. Dilated cardiomyopathy
  - Medical management
  - Pacemaker/AICD in situ
  - Recent Echocardiogram reports normal LV systolic function and no significant valvular heart disease
4. Atrial fibrillation on warfarin
  - No previous documented CVA/TIA

He was considered very high risk and a preoperative CPET test was ordered to stratify risk. His spirometry on this demonstrated a reduction in FEV<sub>1</sub> and FVC consistent with obesity. His anaerobic threshold was measured at 5.5ml/kg/min, with a VO<sub>2</sub> max of 7.5ml/kg/min.

#### **Discussion:-**

1. Do the CPET values need to be adjusted for body weight (use absolute or ideal body weight)? The value may increase a small amount, however the patient would still be at high risk. The Respiratory scientist reported that the patient was unable to exercise for more than one minute.

2. Is there potential to improve patient's risk? This would require discussion with the surgeon about time frames available prior to surgery to minimise risk of cancer progression. Possible interventions that could improve exercise capacity (and reduce risk):
  - Optimisation of haemoglobin and iron stores
  - Weight loss - ? Optifast
  - Prehabilitation – HIIT training in a supervised program
3. Should we repeat the CPET testing to see gains. This will enable us to determine if we have reduced patient's risk. It was also noted that the CPET test (being a maximal exercise stress test) demonstrates to the patient the active nature of recovery from surgery, and that the surgical journey is not something that happens while the patient just passively lies in bed

**TOPIC 4:**        *Follow up on a previous case presented at the PIG meeting (28/2):*

An 84 year old man with moderate “pleasantly confused” ‘mild’ dementia, but objectively worse than initial appearances suggest - MiniCEX 14/30. He knows he is in John Hunter Hospital but has obvious memory issues. Family support/involvement is unclear. He is nevertheless entirely co-operative. He himself has signed the operative consent. The appropriateness of surgery is clear - He has severe knee pain due to osteoarthritis and limited mobility. Surgeons are keen to offer surgery - “the worst knee they have ever seen”. Physically he has moderate chronic airways disease with fine crackles throughout his lungs but no evidence of exacerbation in the last few years. No cardiac symptoms reported – no signs of cardiac failure. Possibly a new T wave inversion on ECG since 2017. Should this be investigated?

Patient was discussed with Cardiology and Orthopaedics:

1. Cardiology – new symmetrical T wave inversion in lateral leads is suspicious for ischaemia. This should be reviewed before his operation. In particular it was noted that the T wave inversion was symmetrical and therefore possibly post ischaemia, as compared to down sloping or biphasic T waves. (See picture below and <https://ecgwaves.com/the-t-wave-physiology-variants-and-ecg-features/>)
2. Orthopaedics – patient attended Orthopaedic clinic and his case was discussed with the team. He was referred back to his GP to identify potential improvements to his cognitive abilities. His capacity to engage in rehabilitation following surgery was a key concern.

**A Normal T-waves**



**Normal T wave**  
Smooth transition from ST-segment to T wave. T wave is slightly asymmetric with a steeper downslope.

**Normal variant**  
Large, asymmetric T wave with broad base. Often in conjunction with slight J point elevation in leads V2-V4.

**B Large T-waves**



**Hyperkalemia**  
Large, symmetric, pointed with short base.

**Hyperacute T wave**  
can be seen in transmural ischemia. High, broad based, symmetric, not pointed. Almost always seen in conjunction with ST-segment elevation.

**C Biphasic (diphasic) T-waves**



Both these T waves are negative (inverted) since the terminal portions are negative.

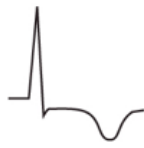
This T wave is positive by definition since the terminal portion is positive.

Whenever spotting a biphasic T wave, try to determine whether it is actually a positive or negative (inverted) T-wave by viewing the terminal portion of the T wave.

**D Negative (inverted) T-waves**



**Post-ischemic**  
Symmetric T wave, with varying depth. Ranges from flat T wave to very deep T wave inversion. Inverted T waves do not equate acute (ongoing) ischemia, but rather appear after an episode of ischemia!



**Acute (ongoing) ischemia**  
T wave inversion with simultaneous ST-segment deviation (most commonly ST-depression). Note that it is the ST-segment deviation that represents the acute ischemia!



**Cerebrovascular insult pattern**  
Very deep (gigantic) T wave inversions in the chest leads. Some studies report this finding in up to 30% of patients with intracerebral hemorrhage.



**Hypertrophic cardiomyopathy**  
Symmetric T wave inversions, most commonly in V1-V3. Often very deep and accompanied by large R waves. Occasionally accompanied by ST-segment depression.



**PERIMYOKARDIT**  
T wave inversions occur after normalization of ST-segment elevations in perimyocarditis. T wave inversions often seen in most leads.

Figure 18. Normal and pathological T-waves.