Disclosures

- I see a few POTS patients
- No one else wants to see them
Disclosures

- I see a few POTS patients
- No one else wants to see them
- They come back
- Some of them feel better
- They tell their GP/physicians/friends
- I see more POTS patients
Outline

1) Definition
2) The 6 blind men of Indostan
3) The usual POTS patient? The usual Dr’s response
4) Treatment – (lack of) evidence base, conservative and drugs
5) Personal treatment strategy
Definition of POTS

1) HR increase >30bpm within 10 minutes of standing (or >40bpm in 12-19yo)
2) Absence of hypotension (ie. No drop >20mm Hg)
3) Frequent symptoms on standing: lightheadedness, palpitations, tremor, fatigue, blurred vision, exercise intolerance
Definition of POTS

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But other symptoms include:
Diarrhoea/vomiting
Temperature dysregulation
Hypermobility
“chronic fatigue”
Brain fog
It was six men of Indostan,
To learning much inclined,
Who went to see the Elephant
(Though all of them were blind),
That each by observation
Might satisfy his mind.

The First approach'd the Elephant,
And happening to fall
Against his broad and sturdy side,
At once began to bawl:
"God bless me! but the Elephant
Is very like a wall!" ....
The Second, feeling of the tusk,
Cried, -"Ho! what have we here
So very round and smooth and sharp?
To me 'tis mighty clear,
This wonder of an Elephant
Is very like a spear!"

The Third approach'd the animal,
And happening to take
The squirming trunk within his hands,
Thus boldly up and spake:
"I see," -quoth he- "the Elephant
Is very like a snake!"

The Fourth reached out an eager hand,
And felt about the knee:
"What most this wondrous beast is like
Is mighty plain," -quoth he,-
"Tis clear enough the Elephant
Is very like a tree!"

The Fifth, who chanced to touch the ear,
Said- "E'en the blindest man
Can tell what this resembles most;
Deny the fact who can,
This marvel of an Elephant
Is very like a fan!"

The Sixth no sooner had begun
About the beast to grope,
Then, seizing on the swinging tail
That fell within his scope,
"I see," -quoth he,- "the Elephant
Is very like a rope!"
And so these men of Indostan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong!

MORAL,

So, oft in theologic wars
The disputants, I ween,
Rail on in utter ignorance
Of what each other mean;
And prate about an Elephant
Not one of them has seen!
The typical patient with POTS

- Has been seen numerous times by GP
- Has been seen by 2 cardiologists
- Has been seen by 1-2 neurologists
- Has been seen by rheumatologist
- Has been seen by gastroenterologist
- Has been seen by AE / MAU units on several occasions
- Has had normal MRI brain, EEG, CT head, echocardiogram, ECG, 24h Holter
- Has looked up the internet and randomly found the term POTS / CFS /ME
Pathophysiology

- 3 things needed for BP to be maintained.

1. Heart rate
2. Force of contraction
3. Vascular resistance

In POTS, vascular resistance fails. Blood tends to pool in lower half → compensatory increase in BP/HR,

Enough to prevent syncope, but not enough to feel normal. May lead to LOC
The usual doctors response

Doctor, may I please tell you my story?

Just answer my questions!
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<tr>
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<td>A regular, structured, and progressive exercise program for patients with POTS can be effective.</td>
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HRS POTS consensus statement : Treatment
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REASONABLE TO RECOMMEND
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**Reasonable to recommend**

**May be ok to recommend**

**Do not recommend**
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The challenge: “I can’t do that because....”

- Tired
- Fatigue
- “You don’t understand”
- “It won’t help”
- “I’ve tried it – it doesn’t work”
How I treat my patients with POTS

• Make them understand physiology
• Simplify explanations
• Time (POTS = late running clinic! expect it)
FEELING UNWELL / LIGHTHEADED

- Blood supply to the brain and heart reduces
- Blood supply reduces further in brain and heart
- Starting to feel mildly unwell, sweaty, lightheaded
1. Basics – keep fluid and salt topped up (2-3L, 6-10g)
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2. Exercise (physical reconditioning)
   a) Recumbent 20-30mins 4-5x a week
   b) If cannot, start slow and build up

   a) To strengthen external muscles
   b) To increase plasma volume
   c) To get used to activity again (we are bipedal by nature!)
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2. Exercise (physical reconditioning)
   a) Recumbent 20-30mins 4-5x a week
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3. Drugs
   a) Midodrine (constricts vessels)
Treatments

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2. Exercise (physical reconditioning)
   a) Recumbent 20-30mins 4-5x a week
   b) If cannot, start slow and build up
3. Drugs
   a) Midodrine (constricts vessels)
   b) Fludrocortisone (expands volume)
What if…

What If We Created a Drug That Could ….
What if...

What If We Created a Drug That Could ....

WORSE
Symptoms

BETTER
Symptoms

Reduce SOB

Shortness of Breath
What if We Created a Drug That Could ….

What If We Created a Drug That Could ….

**WORSE**
Symptoms

**BETTER**
Symptoms

Reduce SOB

**WORSE**
Symptoms

**BETTER**
Symptoms

Reduce lightheadedness

---

Imperial College Healthcare
NHS Trust
The Benefit of HOPE

What If We Created a Drug That Could ....

WORSE Symptoms

Reduce SOB

BETTER Symptoms

Reduce lightheadedness

Raj et al. Circ 2009 Sep 1: 120(9): 725-734

Figure 4. Changes in individual symptoms in Protocol #1
The changes in the 9 individual components of the Vanderbilt POTS symptom score (in arbitrary units [au]) are presented from immediately before to 2 hours following study drug administration for propranolol 20mg (solid black) and placebo (black dots). A negative number represents an improvement in symptoms.
Figure 4. Changes in individual symptoms in Protocol #1
The changes in the 9 individual components of the Vanderbilt POTS symptom score (in arbitrary units [au]) are presented from immediately before to 2 hours following study drug administration for propranolol 20mg (solid black) and placebo (black dots). A negative number represents an improvement in symptoms.
How I treat my patients with POTS

- Make them understand physiology
- Simplify explanations
- Long consults (POTS = late running clinic! expect it)

- Engagement
- Belief
- Inspiration

Hope
I may appear to be sitting, but my body is running a marathon.

P.O.T.S.
Postural Orthostatic Tachycardia Syndrome

Postural Orthostatic Tachycardia Syndrome

POTS
My heart rate skyrocket.
My blood pressure drops.
I get dizzy.
I get nauseated.
I am cold.
I am hot.
I get brain fog.
I faint.
I have POTS.
Current Treatment Options for PoTS

Boon Lim
Consultant Cardiologist
Clinical Lead for Imperial Syncope Diagnostic Unit
Hammersmith Hospital
Exercise programs work in Dallas

Dallas Studies
• Benjamin Levine
• 3 month programme
• Supine exercises – to start
• 75 – 85% HRM
• 2 – 4 times per week
• 30 – 45 min
• Resistance exercises