



## Brief report

### Registry data- A preliminary report on Head up Tilt testing registry of a Tertiary cardiology centre in Sri Lanka

De Vas Goonewardane, A. P. N. 1; Kularathna, K. S. C. 3; Kottegoda, S. R. 2  
 1-Senior Registrar in Cardiology, Cardiology Unit, SJGH, Sri Lanka.  
 2-Consultant Electrophysiologist, Cardiology Unit, SJGH, Sri Lanka.  
 3- Medical officer, Cardiology Unit, SJGH, Sri Lanka.  
 Corresponding author: De Vas Goonewardane, A. P. N.  
 Email: nishanvas@yahoo.com

#### Abstract

Head up tilt(HUT) testing is a non-invasive technique to evaluate reflex syncope. It may aid in crucial management decisions in the treatment of highly symptomatic patients. First consecutive 63 patients who underwent HUT during the first four months after initiation of the facility in our unit were recruited for the survey. Patients underwent a routine, which was mixed between Italian and Westminster protocols with sublingual nitroglycerin augmentation and checking for carotid sinus hypersensitivity. Demographic and test details were collected. Female to male ratio was 1.4: 1 and mean age was 39 years. Recurrent syncope was the commonest indication for undergoing HUT. Our data showed high HUT positivity at 46% compared to regional data and the predominant reaction type was Cardioinhibitory (n= 18/29). No statistical significance was noted in correlation statistics with measured variables. Three underwent permanent pacemaker implantation due to long asystolic pauses. Two thirds of positive cases responded favourably to medical management. Long term registry in this aspect would be important to judge epidemiological patterns in our locality and assess response to intervention. It appears our selection criteria has had high specificity for reflex syncope. Selection of correct patient for pacing is crucial.

### Introduction

Transient loss of consciousness (TLOC)[1] is a common indication for being referred to Cardiology team. Proper assessment of such a patient encompasses most importantly a detailed history[2] followed by focused examination and relevant investigations to delineate the cause. Syncope differs from other forms of TLOC in its pathophysiology, where transient global cerebral hypo perfusion occurs due to low peripheral resistance and/or low cardiac output. Hence it's defined as pan-cerebral hypo perfusion accompanied by a lack of postural tone and unconsciousness without focal neurological deficit.

After initial cardiac evaluation for structural and electrocardiographic abnormalities Head up tilt (HUT) testing serves as an important tool in the electro physiologist's armamentarium. After initiating Tilt testing facility in December 2017 we have been receiving an ever increasing load of patients for HUT. This study is designed to evaluate the preliminary 63 patients tilt data at our centre.

### Methodology

Indications for testing:

- 1) Unexplained recurrent syncopal attacks.
- 2) Single syncopal attack in a high risk setting or patient characteristics.
- 3) Evaluation of postural orthostatic tachycardia syndrome (POTS).

### Procedure

Patients were instructed to fast for 6 hours including 2 hours for clear liquids. Procedure is performed during morning hours in a specially prepared dimly lit, quiet room minimizing external stimulation of sense organs. Relevant drugs are omitted 5 half lives prior to test date. A mix of Westminster and Italian protocols is utilized with Sublingual Glyceryl Tri Nitrate (GTN) augmentation. Every patient is tested for carotid sinus hypersensitivity at the end of HUT. All patients who underwent the test in the first four months were systematically entered in the registry (n=63)[3,4].

### Results

Total of 63 patients were screened with HUT. Age distribution was from 8-82 years with a mean age of 39 years. Male to Female ratio was 1: 1.4. 29/63 patients (46%) were HUT positive in either of the three response categories.

Commonest indication for undergoing testing was recurrent unexplained syncope which comprised approximately three quarters of total cases. *table 1*

**Table 1-** Indication for HUT

	Frequency	Percent
Recurrent syncope	46	73.0
Single high risk	15	23.8
POTS evaluation	2	3.2
Total	63	100.0



**Table 2-**Type of response to HUT

	Frequency	Percent
Mixed	5	7.9
Cardio inhibitory A	6	9.5
Cardio inhibitory B	12	19.0
Vasodepressor	6	9.5
Negative	34	54.0
Total	63	100.0

**Table 3-**Carotid sinus hypersensitivity

	Frequency	Percent
Yes	9	14.3
No	54	85.7
Total	63	100.0

Commonest type of response is of the Cardio inhibitory variety (Type 2 reaction) [table 2] which was seen in 53% of positive cases. It is defined as bradycardia below 40/min for 10 seconds or more with/without accompanying asystole. Carotid sinus hypersensitivity was observed in 14% of total cases.[table 2 & 3]

Most importantly correlation statistics including Chi square assessment showed that age, gender, indication for testing, carotid sinus response did not have statistical significance (P>0.05) with regards to HUT positivity.[table 4]

Of the Cardio inhibitory HUT positive cases with asystolic response, 3 patients underwent dual chamber pacemaker insertion.

**Table 4-** Statistical analysis

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.278 <sup>a</sup>	2	.528
Likelihood Ratio	1.302	2	.522

**Table 5-** Symptomatic management

		Frequency	Percent
Valid	Improved	42	66.7
	Not improved	21	33.3

Remainder of the positive cases were treated with optimum medical therapy and lifestyle modification techniques. At the end of one month clinic visit nearly two thirds of patients had symptomatically improved with this strategy according to our objective assessment [table 5].

**Conclusion.**

HUT is a non invasive test to assess the reflex syncope and pathological mechanisms leading to it [5].

It is cost and time efficacious and provides very important details about patient’s cardiovascular coping mechanisms in times of postural destabilization. A long term registry in this aspect would be important to judge epidemiological patterns in our locality and assess response to intervention. It appears our selection criteria has had high specificity for reflex syncope diagnosis compared to regional data.

Pacing is probably efficacious for asystolic reflex syncope but has no role in combating hypotension. Combining the results of 5 trials, where 318 patients were evaluated; syncope recurred in 21% (33/156) of the paced patients and in 44% (72/162) of the not paced patients (p<0.000). It seems that pacing therapy might have been effective in some but not in all patients[6].

**References**

1. Akdemir, B., et al., *Syncope: Assessment of risk and an approach to evaluation in the emergency department and urgent care clinic.* Indian Pacing Electrophysiol J, 2015. **15**(2): p. 103-9.
2. Brignole, M., *Diagnosis and treatment of syncope.* Heart, 2007. **93**(1): p. 130-6.
3. Kenny, R.A., D. O’Shea, and S.W. Parry, *The Newcastle protocols for head-up tilt table testing in the diagnosis of vasovagal syncope, carotid sinus hypersensitivity, and related disorders.* Heart, 2000. **83**(5): p. 564-9.

**Brief report**

4. Baron-Esquivias, G. and A. Martinez-Rubio, *Tilt Table Test: State of The Art*. Indian Pacing Electrophysiol J, 2003. **3**(4): p. 239-52.
5. Strickberger, S.A., et al., *AHA/ACCF Scientific Statement on the evaluation of syncope: from the American Heart Association Councils on Clinical Cardiology, Cardiovascular Nursing, Cardiovascular Disease in the Young, and Stroke, and the Quality of Care and Outcomes Research Interdisciplinary Working Group; and the American College of Cardiology Foundation: in collaboration with the Heart Rhythm Society: endorsed by the American Autonomic Society*. Circulation, 2006. **113**(2): p. 316-27.
6. Varosy, P.D., et al., *Pacing as a Treatment for Reflex-Mediated (Vasovagal, Situational, or Carotid Sinus Hypersensitivity) Syncope: A Systematic Review for the 2017 ACC/AHA/HRS Guideline for the Evaluation and Management of Patients With Syncope: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society*. J Am Coll Cardiol, 2017. **70**(5): p. 664-679.