

# The usefulness of Thyroid Function Test(TFTS) in patient with symptomatic bradycardia/complete heart block

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## BACKGROUND:

Thyroid disorders is common among elderly patients. Hampshire is an affluent part of UK and large proportional of population is elderly and hypothyroidism with or without symptoms may be one of the presenting feature.

The causes symptomatic of bradycardia/complete are multifactorial. Bradycardia/complete heart block may be drug induced, electrolyte imbalance, ischaemic heart disease, fibrosis and sclerosis of conduction system, increased vagal tone, and severe hypothyroidism.

## OBJECTIVES:

To identify/find out whether Thyroid Function test were performed in patients presenting with bradycardia/CHB in keeping with good practice prior to permanent pace maker insertion.

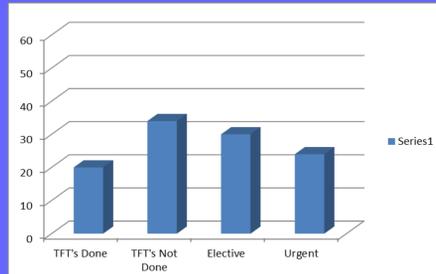
## METHODS:

We collected data from a list of 54 patients who needed PPM insertion from electrophysiology department/cardiology for the past 3 months. This was retrospective audit. From this list we were able to identify whether patients had PPM inserted following emergency admission (URGENT) or routine (ELECTIVE) and whether they needed temporary pacing or not and especially if they had thyroid function test (TFTS) done prior to intervention.

The data was collected using a proforma with details of type of rhythm on admission, thyroid function test on admission/out of hours, whether the patients had temporary pacing wire inserted and or not.

## STANDARDS:

1. Thyroid function test done as per good practice-100%



TFT's Done- 20  
TFT's not Done-34  
Elective- 30  
Urgent- 24

Fig.1 – Number patients and TFTS investigation

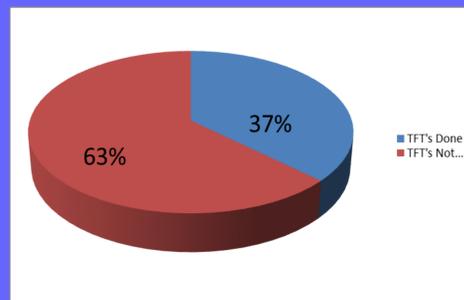
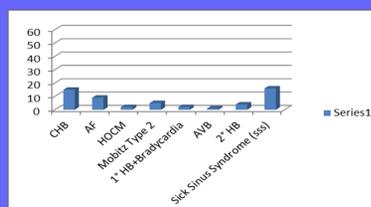


Fig.2-Proportional of patients in %



CHB- 15  
AF- 9  
HOCM- 2  
Mobitz Type 2- 5  
1<sup>st</sup> HB+Bradycardia- 2  
AVB- 1  
2<sup>nd</sup> HB- 4  
Sick Sinus Syndrome (SSS)-16

Fig.3- Types of bradyarrhythmias

## RESULTS:

20 patients (37%) had their thyroid function test (TFTS) prior to having PPM inserted, 15 had normal TFTS not on treatment, 5 normal TFTS on treatment and 34 patients (67%) did not have thyroid function test done. (Fig.2). 24 patients presented as acute admission and needing emergency/urgent PPM, and 30 patients had PPM inserted electively (Fig.1). 15 patients presented with complete heart block, 9 with slow Atrial fibrillation with pauses, 2 patients had hypertrophic cardiomyopathy (HOCM) with bradycardia/paroxysmal atrial fibrillation/supraventricular tachycardia (SVT), 5 patients had Mobitz type 2, 2 patients had symptomatic sinus bradycardia, 3 patients had 1<sup>st</sup> degree heart block + bradycardia, 4 patients 2<sup>nd</sup> degree AV block, 16 patients had sick sinus syndrome (Fig.3).

## DISCUSSION:

- Hypothyroidism is more common in older people especially among women, principally due to the rising incidence and prevalence of autoimmune thyroiditis. Symptomatic bradyarrhythmias may be due to different causes including hypothyroidism, electrolyte imbalances or ischaemic heart diseases.
- Hypothyroidism and electrolyte disturbances are reversible causes of isolated bradyarrhythmias and the treatment is by correcting electrolyte imbalance/hypothyroidism.
- Hypothyroid patients may have premature ventricular beats with long QT and may lead to polymorphic ventricular fibrillation (torsades de pointes)

Some of the patients with symptomatic bradycardia/complete may need temporary wire pacing (insertion) or PPM insertion.

## CONCLUSION

- Severe hypothyroidism and electrolyte imbalances are potentially reversible causes of symptomatic bradycardia/complete heart block.
- Thyroid function test (TFTS) as well as urea and electrolytes should be performed/requested in all patients with symptomatic bradycardia/complete heart block prior to insertion of permanent pace maker (PPM) as per good practice guidelines.

## References.

- Long QT interval and polymorphic VT in hypothyroidism. Fredlund BO et al-Acta Med SCAND 1983
- Mathew I et al -Hypothyroidism in the elderly Enodotext.org
- Schoenmaker N et al Hypothyroidism as a cause of atrioventricular in an elderly patient-Netherland Heart Journal
- Mohammad Shojaie et al-Primary hypothyroidism presenting with torsades de pointes-Case report-Cases Journal-V 1 2008:298
- Klein et al-Uptodate
- Sharma S et al-Rapid review of clinical medicine