

MANAGEMENT OF HYPERTHYROIDISM IN TRINIDAD AND TOBAGO

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SUMMARY A questionnaire study of current practices regarding the investigation and treatment of hyperthyroidism was undertaken in Trinidad and Tobago between December 1999 and March 2000. The study evaluated the choice of laboratory tests requested and the therapeutic choices for a standard patient with hyperthyroidism. In addition, clinical scenarios based upon variations of the standard case (by altering age, gender, goitre size and duration of disease) were also tested. Two hundred and ninety-six questionnaires were sent; 134 (45%) were returned, of which four were excluded for incomplete data. Ninety five per cent of respondents requested biochemical confirmation but the range of tests varied widely. Thyroid scintigraphy was requested by 36% and thyroid ultrasound by 35%. Medical treatment (75%) with antithyroid drugs was the most popular choice for treatment of the standard patient. This did not change significantly if the patient was male. On the other hand, radioiodine (62%) was more popular in the treatment of chronic/relapsing hyperthyroidism ($p < 0.005$). In the elderly, medical management was still the most popular choice (57%) but the choice of radioiodine therapy was significantly increased compared with that in the standard patient (36% vs 19%) ($p < 0.005$). In a young female with a large goitre and chronic disease, surgical intervention (61%) was the treatment of choice, especially among surgeons and general practitioners; radioiodine was chosen by 28% of respondents (mostly internists). There is need for clear guidelines in investigating thyroid disease but therapeutic choices are well informed and consistent with accepted practice elsewhere. In particular there is a fairly liberal attitude towards radioiodine use in hyperthyroidism. (*Int J Clin Pract* 2002; **56**(10): 746-749)

Graves' disease is the most common cause of hyperthyroidism.¹ Its peak incidence is in the third or fourth decade of life and occurs about 4-5 times more frequently in females. The diagnosis can be made on clinical grounds alone – diffuse goitre with a bruit, classic eye signs or the presence of pretibial myxoedema – but biochemical, immunological and radionuclide scanning can be used for confirmation.

Three well-established modalities of treatment, i.e. antithyroid drugs (ATD), surgery and radioactive iodine (RAI), are currently available but considerable variation in choice of therapy exists across continents and cultures. Factors influencing such choices include geographical and regional practice, age and gender of patient, physician preference and patient bias.²⁻⁴

Trinidad and Tobago is a twin-island unitary Caribbean state with a population of 1.2 million comprising equal proportions of citizens of African and Indian descent. About 1000 doctors, most of whom are general practitioners, are registered to practise with the Medical Board of Trinidad and Tobago (MBTT). Graves' disease is a common clinical problem in Trinidad and Tobago but current practices with regard to investigation and treatment are not known. The aim of this study was to evaluate current investigative and therapeutic

approaches to Graves' disease in Trinidad and Tobago that would allow for comparison with practices elsewhere, and to inform national guidelines for investigation and treatment.

MATERIALS AND METHODS

A questionnaire and covering letter were posted to a random sample of 222 GPs, 37 internists and 37 surgeons registered to practise with the MBTT. Doctors known to have emigrated, retired or died were replaced by another randomly selected practitioner registered with the MBTT. The sample size for GPs was based on an estimate of 10%, alpha set at 0.05, and a non-response rate of 35%. All doctors registered with the MBTT as specialists in internal medicine, general surgery or otolaryngology were polled.

The covering letter summarised the purpose of the study and asked recipients to complete the questionnaire and return it in the enclosed stamped, addressed envelope. No identifying information was requested, but in order to keep track of who had responded, a code number was written on the back of the self-addressed envelope. Only the secretary had access to the master list of doctors and assigned code numbers. When the questionnaire was returned, the secretary would indicate on the master list that the doctor had returned the questionnaire. Only those who had not returned the ques-

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ERRATA

In the September 2002 issue (Vol 56, No 7, pp509-514), some lines inadvertently became transposed during the printing of the article 'Galantamine provides broad benefits in patients with "advanced moderate" Alzheimer's disease (MMSE \leq 12) for up to six months' by DG Wilkinson *et al.* The first sentence on page 512 should read: 'At 5-6 months, nearly half (46%; n=73) of patients in the IIT analysis with baseline ADAS-cog scores $>$ 30 who received galantamine showed improvements of at least four points on ADAS-cog, compared with 16% (n=25) who received placebo (p $<$ 0.001)'.

In *IJCP* Supplement 127 (June 2002) an error appeared in the article 'The tolerability and safety of cholinesterase inhibitors in the treatment of dementia' by F Inglis (pages 45-63). The error relates to the donepezil data in Table 2. The correct figures are: nausea 17% vs 4% (donepezil 10 mg vs placebo) and vomiting 10% vs 2% (donepezil 10 mg vs placebo). The error arose because of numbers of patients, rather than percentages, being used in the preparation of the Table.

tionnaire within three weeks were sent a reminder or telephoned and offered the opportunity to complete the questionnaire verbally. The questionnaire did not contain identifying information and it was only this questionnaire that was given to the investigators. The methodology is similar to that used for another unpublished study involving the same sampling frame but designed to answer a completely unrelated research question and was conducted some 3-4 months earlier than the current study.⁵ The study was approved by the ethics committee of the faculty of medical sciences at the University of the West Indies, Trinidad.

The questionnaire was divided into three sections. In the first section, demographic data were obtained including age, gender, specialty (general surgeon, internist, GP or ENT surgeon), duration of clinical practice, country of training, locality of practice, whether practice was hospital or community based, the number of thyroid patients seen annually and whether radioiodine treatment (having been introduced seven years earlier) was available in Trinidad.

In the second section, respondents were given the following case scenario of uncomplicated Graves' disease – the prototype used in previously published studies of a similar nature but conducted elsewhere.⁶

A 43-year-old woman with moderate but overt signs of hyperthyroidism of 2-3 years' duration. She is healthy, takes no medications, and leads an active working life. She has two children, aged 5 and 10 years, and does not plan on being pregnant again. This is her first episode of hyperthyroidism. She has a diffuse goitre of 40-50 g, pulse rate of 105 beats/min and regular, and typical but minimal eye signs.

The respondents were asked what scanning procedure(s) should be performed to elucidate the diagnosis. A list was given and the respondent was to tick appropriately. No such list was given for biochemical tests, and respondents were asked in an open-ended way to list the required test(s). Finally, the respondent was asked the therapeutic choice with respect to the standard case.

In the third section, four variations from the index patient were presented (Table 1) and respondents asked to indicate their choice of treatment.

Statistical methods

Comparisons were made between treatment choices for the standard case and each of its variations. Therapeutic choices

Table 1. The index patient and four variations

No	Age (yr)	Sex	Severity	Goitre (g)	First episode
Index	43	F	Moderate	40-50	Yes
1	43	F	Moderate	40-50	No (3-4 year history being treated with ATD)
2	43	M	Moderate	40-50	Yes
3	71	F	Moderate	40-50	Yes
4	16	F	Severe	80	No (3-4 year history being treated with ATD)

ATD, antithyroid drugs

for each case variation were compared with the standard case using χ^2 test. Differences in treatments chosen by GPs, internists and general surgeons were also compared. Results were analysed using Epi-info software, version 6.0.

RESULTS

Of the 296 questionnaires mailed, 134 questionnaires were returned (45%); 130 (44%) were used for analysis and four excluded because of incomplete data. The respondents comprised 28 internists (76% response rate), 23 specialist surgeons (62% response rate) and 79 GPs (36% response rate), differences that were significant ($p < 0.05$). The vast majority of respondents were male (88%) since males exceeded females in the sampling frame (81% vs 19%) and males were more likely to respond than females (48% vs 28%, $p < 0.05$). Medical respondents were based in the community (52%); 18% were solely hospital based and 29% had practices both in hospital and in the community. Most had undergone initial training in the West Indies (60%) but many had subsequent experience in the UK (43%) and/or North America (21%). A few had clinical experience in India (8%) or Africa (2%). The median duration of clinical practice was 25 years (range <1-51 years). Overall, the number of thyroid cases seen annually was 2478, with a mean of 19 per doctor per year of whom approximately one-third were for hyperthyroidism. Most of the respondents (88%) knew that RAI treatment was available in Trinidad; 8% indicated that it was not and the remainder were unaware of its availability.

Investigation and management of the prototype patient

Scanning procedures

The doctors were given choices of performing ¹³¹I scan, ultrasound, technetium-99, or no scanning procedure. Thirty-eight per cent of respondents chose not to use any scanning procedure. Thyroid scintigraphy was requested by 36% of respondents, of whom approximately one-fifth also requested a thyroid ultrasound. Twenty-four per cent chose thyroid ultrasonography as the only *in vivo* diagnostic study. A few (2%) did not answer this question (Figure 1).

Laboratory tests

Table 2 shows the response rates for choosing any given biochemical or other confirmatory test. About 95% sought biochemical confirmation but the choice varied considerably.

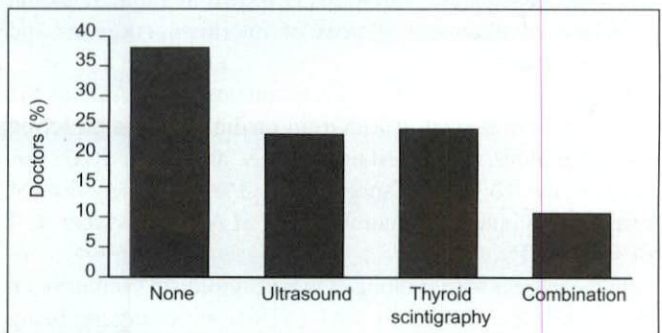


Figure 1. Scanning procedures requested

Table 2. Response rates for choice of tests

Laboratory test	Response (%)
Thyroid function tests	48
Total T3	45
Total T4	45
Thyroid-stimulating hormone	43
Complete blood count	38
Blood glucose	17
Blood urea nitrogen, electrolytes, creatinine	10
Thyroid autoantibodies	9
Erythrocyte sedimentation rate	9
Free T4 index	8
Lipid profile	7
Serum calcium	6
Electrocardiogram	6
T3 uptake	5
Free T4	4
Chest X-ray	4
Free T3	2

Table 3. A comparison of therapeutic choices

Case Index	Choice of treatment				p-value
	ATD	RAI	Surgery	Combination	
1	97 (75%)	24 (18%)	1 (1%)	8 (6%)	0.0000
2	11 (9%)	81 (62%)	30 (23%)	8 (6%)	NS
3	95 (73%)	28 (22%)	3 (2%)	4 (3%)	0.005
4	74 (57%)	47 (36%)	0 (0%)	9 (7%)	0.0000
5	5 (3.8%)	36 (27.7%)	79 (60.8%)	19 (7.7%)	0.0000

ATD, antithyroid drugs; RAI radioactive iodine

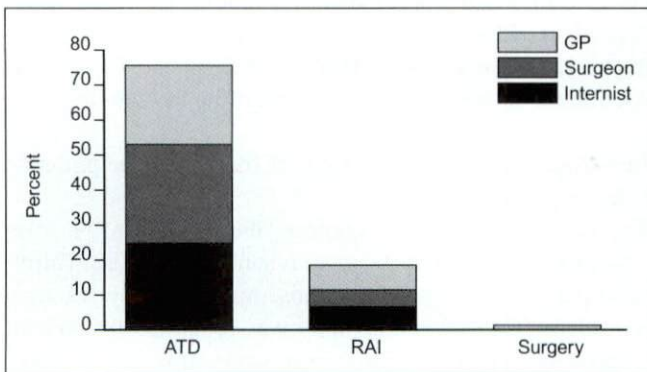


Figure 2. Therapeutic choices for index case

'Thyroid function test' was chosen 48% of the time and total T4 and T3, 45% each. Free T4 and TSH were together chosen less than 5% of the time.

Therapeutic choices

A summary of therapeutic choices made by respondents for the index case and its variations is shown in Table 3, and an overview of treatment choices of internists, surgeons and GPs in Figures 2-6.

For the index case, 75% of respondents chose ATD as the modality of treatment. Antithyroid medication was preferred by all groups – internists, surgeons and GPs. RAI was chosen by 18% and surgery by 1%. Another 5% of respondents opted for a combination of ATD and either RAI or surgery (Figure 2).

In the patient with prolonged hyperthyroidism (variation 1), the preference shifted to RAI (62%), with surgery being selected by 23% and continuation of ATD by 9%

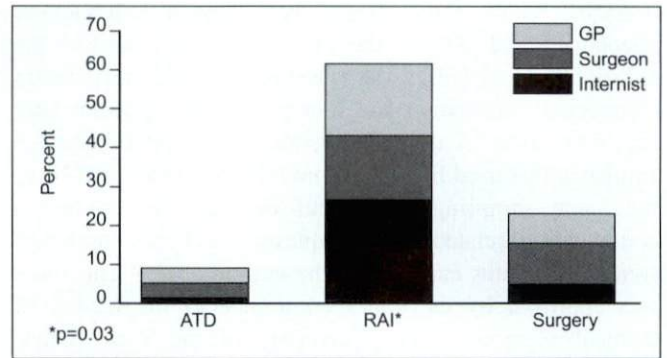


Figure 3. Therapeutic choices for variation 1

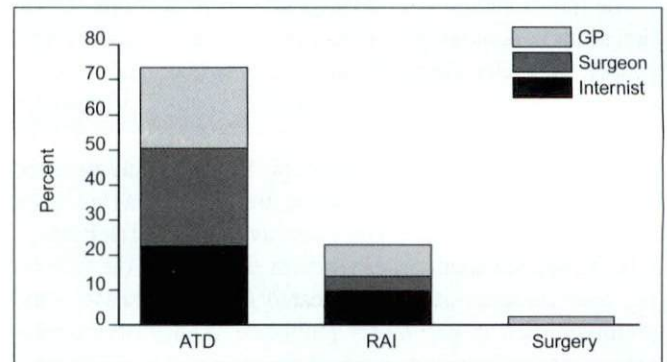


Figure 4. Therapeutic choices for variation 2

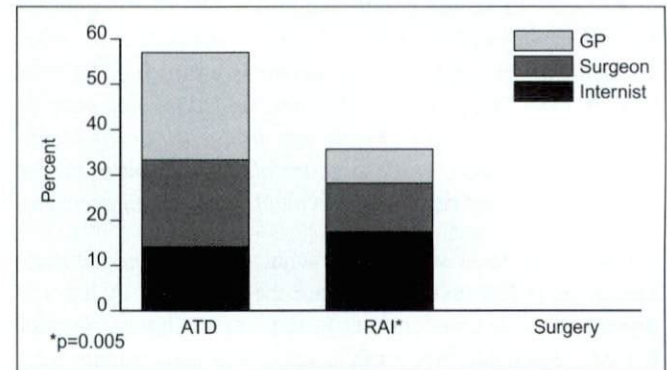


Figure 5. Therapeutic choices for variation 3

(p=0.0000). In a subgroup analysis, the internists showed most preference for RAI compared with GPs and surgeons (p=0.03) (Figure 3).

For a man with hyperthyroidism (variation 2), differences in choice of treatment compared with the female (index case) were not statistically significant (Figure 4).

In the case of the elderly patient (variation 3), treatment with ATD was chosen by 57% and RAI by 36%, which, when compared with treatment of the index case, showed statistically significant differences (p<0.005), with a substantial increase in the popularity of radioiodine for this age group. Surgery as sole therapy was not favoured by any respondent (Figure 5).

The final variation posed a young girl with severe disease and a large goitre who had been treated with ATD for a prolonged period. The majority (62%) chose surgery as the primary modality of treatment, the only scenario where surgery was a popular option. Surgeons and GPs were more

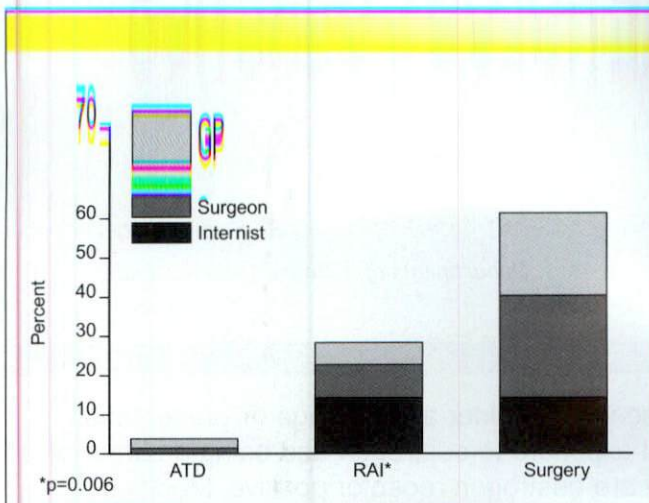


Figure 6. Therapeutic choices for variation 4

likely to opt for surgery in this case than internists, who were equally divided between RAI and surgery (Figure 6).

DISCUSSION

The 45% return rate of questionnaires in this study is comparable to that of similar studies in the UK (45.1%) and the US (52%)^{4,6} but less than the 70% response rate for a study using a similar methodology to the present study. We believe the lower response rate in our study may relate to the fact that the study followed on so quickly after the first and coincided with Christmas and National Carnival celebrations.

The present survey aimed to define current investigative and therapeutic approaches in Trinidad and allowed comparison with similar studies in North America, South America, the UK and Asia. With respect to investigation, most clinicians sought biochemical confirmation, but the choice of tests varied widely (from a carte-blanc request of 'thyroid function tests' to specific tests of free T4 and ultrasensitive TSH). The request for 'thyroid function tests' has cost implications, because laboratories receiving such a request tend to run a full set of tests. The local cost for such a set is approximately US\$29-\$35, compared with a selected panel of free T4 and TSH which would cost approximately US\$27-\$32. A low TSH (<0.01) and elevated free T4 provides sufficient sensitivity and specificity confidently to establish a diagnosis of hyperthyroidism.⁷

For *in vivo* testing, scintigraphy was requested by 36% of respondents, in marked contrast to endocrinologists surveyed in Europe and North America where scintiscans were more popular (66% and 92.3% respectively).^{6,8} In the present study, ultrasonography was used by 35% overall; 31% of this was used in addition to scintigraphy. In Europe, however, ultrasound was requested by approximately 21% overall, 82% of which was combined with scintiscans. In

Asian thyroidologists,^{8,9} but different from those of North America,⁶ where there is a clear preference for RAI: 69% of physicians in the US would choose RAI as first line treatment, compared with 18% for the present study, 15% for the South American, 22% for the European, 22% for the Chinese and 11% each for the Japanese and Korean groups.

For relapsing or chronic disease unresponsive to medical management RAI is universally accepted as the treatment of choice. Thus South American (53.3%), North American (93%), Asian (70% and 80% in Korea and China respectively) and European physicians (64%) would choose RAI in this scenario. Trinidadian physicians (62%) have clearly adopted this practice. Much more interesting is the high degree of acceptability of RAI by local doctors in the treatment of younger female patients, where it was chosen by 28% of respondents. This is comparable to 33% in the North American study but different from the practice in the UK where there is still reluctance to treat younger individuals with RAI despite the lifting of age and gender restrictions.⁴

As a therapeutic option, surgery was not favoured, except in younger patients with chronic disease. Chronic duration, younger age and larger goitre were the simultaneous variations from the index case, so it is difficult to determine which of these factors most influenced the popular choice of surgery in this scenario. In the US, surgery for hyperthyroidism is uniformly unpopular; in Europe and Japan, surgery is the therapy of choice for the hyperthyroid patient with a large goitre.

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