

Research paper

An Epidemiological Perspective Autoimmune Thyroid Disorders

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### Abstract

Thyroid diseases are common worldwide. In India too, there is a significant burden of thyroid diseases. According to a projection from various studies on thyroid disease, it has been estimated that about 42 million people in India suffer from thyroid diseases. This review will focus on the epidemiology of five common thyroid diseases in India: (1) hypothyroidism, (2) hyperthyroidism, (3) goiter and iodine deficiency disorders, (4) Hashimoto's thyroiditis, and (5) thyroid cancer. This review will also briefly cover the exciting work that is in progress to ascertain the normal reference range of thyroid hormones in India, especially in pregnancy and children.

### Introduction

Thyroid diseases are, arguably, among the commonest endocrine disorders worldwide. India too, is no exception. According to a projection from various studies on thyroid disease, it has been estimated that about 42 million people in India suffer from thyroid diseases. Thyroid diseases are different from other diseases in terms of their ease of diagnosis, accessibility of medical treatment, and the relative visibility that even a small swelling of the thyroid offers to the treating physician. Early diagnosis and treatment remain the cornerstone of management.

### Hypothyroidism

Among the various varieties of hypothyroidism, congenital hypothyroidism is probably the most important, as it requires an early diagnosis, which is usually followed by appropriate therapy that can prevent the onset of brain damage. Studies from Mumbai have suggested that congenital hypothyroidism is common in India, the disease occurring in 1 out of 2640 neonates, when compared

with the worldwide average value of 1 in 3800 subjects. There is often a delay in the diagnosis of congenital hypothyroidism in the country.

Among adult people in India, the prevalence of hypothyroidism has been recently studied. In this population-based study done in Cochin on 971 adult subjects, the prevalence of hypothyroidism was 3.9%. The prevalence of subclinical hypothyroidism was also high in this study, the value being 9.4%. In women, the prevalence was higher, at 11.4%, when compared with men, in whom the prevalence was 6.2%. The prevalence of subclinical hypothyroidism increased with age. About 53% of subjects with subclinical hypothyroidism were positive for anti-TPO antibodies. This was a population-based study, which used cluster sampling strategy.

### Hyperthyroidism

The prevalence of hyperthyroidism has been studied in several studies. In an epidemiological study from Cochin, subclinical and overt hyperthyroidism were present in 1.6% and 1.3% of subjects participating in a community survey. In a hospital-based study of women from Pondicherry, subclinical and overt hyperthyroidism were present in 0.6% and 1.2% of subjects.

### Goiter And Iodine Deficiency

The link between endemic goiter and iodine deficiency has been researched in India by several eminent researchers, and this has led to the publication of several important reports. Critical research has resulted in endemic goiter being reported from all over the country and not just from the Himalayan and Sub-Himalayan regions. In the postiodization phase, what happens to the prevalence of goiter? This very important question was answered in an elegantly

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conducted study. About 14,762 children from all over India were studied for the following characteristics: goiter prevalence, urinary iodine and thiocyanate excretion, functional status of the thyroid, as well as serological and cytopathological markers for thyroid autoimmunity. About 23% of subjects had a goiter. A significantly higher level of median urinary thiocyanate (USCN) excretion was noted in goitrous subjects (0.75 mg/dl) when compared with controls (0.64 mg/dl;  $P < 0.001$ ).

### Antithyroid drugs

Both are easily and rapidly absorbed and have a long half life. Both drugs inhibit iodination of tyrosine in thyroglobulin but PTU also prevents conversion of thyroxine (T<sub>4</sub>) to triiodothyronine (T<sub>3</sub>) in thyroid and peripheral tissues—of advantage in severe thyrotoxicosis or thyrotoxic storm. Thionamides may also have immune suppressive effects.

PTU may rarely cause an allergic hepatitis with a poor prognosis. Withdrawal of PTU and management of liver failure should be done in a specialised unit. This type of liver dysfunction should be differentiated from the more common, benign, and transient liver enzyme increase (up to six times normal) that is self limiting despite continued therapy. CMZ and MMI may cause cholestatic liver dysfunction that recovers on drug withdrawal. In the above situations the careful introduction of the alternative class of ATD or other drugs (for example, lithium) may have to be considered.

ATD particularly PTU may cause vasculitis (some ANCA positive) with multisystem involvement. Immediate drug withdrawal (with remission in most), high dose glucocorticoids, cyclophosphamide, and haemodialysis may be required.

### Thyroid eye disease

Up to 5% with TED require active intervention for sight threatening disease. The rest may require symptom relief with artificial tears, sleeping propped up, and protection from dust. Stopping smoking is essential. Those requiring active treatment may need corticosteroids (for soft tissue, recent extraocular and optic nerve involvement; given intravenously for greater effect), orbital decompression surgery or radiotherapy alone or in combination.

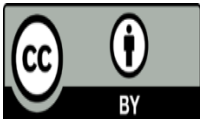
### Conclusion

In the past 2 years, exciting work has been carried out to understand the thyroid in pregnancy and childhood in India. Interesting work is in progress to ascertain the predictors of thyroid gland size in an Indian population. In a study of 1002 children from Gujarat, the authors note that the prevalence of goiter was very high (80%) when assessed by ultrasound. This was also a population with a high prevalence of malnutrition (82% subjects were underweight).

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