Prevalence of Goitre in Raichur District (Karnataka): A Descriptive Study

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Abstract This prevalence study was exclusively for the goitre detection in individuals who has no prior awareness of thyroid disorder and also those patients giving history of signs and symptoms of such conditions. Subjects underwent investigations for (T3, T4, TSH and FNAC) to analyze status and type of Goitre. Of the first 30 cases, only 8 cases were investigated and later on personal interest for confirmation of goitre disorder prevalence additional 70 cases were assessed of which 51 cases were investigated. On basis of investigation and epidemiology, we concluded that probably soil and water sources contain less iodine. Sample shown are comparatively less, but in our area number of goitre cases are more and it needs further extensive survey.

Keywords Epidemiology · Goitre · Thyroid · Iodine

Introduction

The epidemiology of thyroid disease has in fact for practical purposes become synonymous with that of simple goitre. Using as a definition of goitre, the arbitrary criterion of a thyroid which is distinctly larger than normal and as a

definition of endemicity the occurrence of goitre in more than 10% of the population. Stanbury (1967) estimates that 50 million individuals throughout the world may be affected by endemic goitre [1]. Although stress was laid on apparently healthy family members of patients with thyroid disorders and also on carriers of other ailments liable to be associated to thyroid problems. Various etiological factors in addition to iodine deficiency contribute to goitre endemicity, vitamin A deficiency and protein energy malnutrition, both of which can affect thyroid function, and the very high consumption of pearl millet, which contains thiocyanate, a goitrogenic substance [2]. Benign multinodular goitre is a common problem affecting 5% of the general population in non-endemic and 15% in endemic areas [3]. (Fig. 1).

Aims and Objective

- To determine the prevalence of the goitre in outpatients attending the N.R.M Hospital.
- To compare and correlate the prevalence of goitre in various socioeconomic status.

Materials and Methods

Though Raichur is in Deccan Plateau, comes under less rain fall category area and covered by two rivers. The numbers of goitre cases are comparatively more which contemplated us to take the survey. The Survey conducted amongst outpatients of N.R.M, E.N.T Hospital Raichur; Between June 2000 to February 2002. 100 outpatients were included in the study. Subjects underwent investigations for T3, T4, TSH and FNAC to analyze the status and type

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of Goitre. Of the first 30 cases, only 8 cases were investigated and later on on personal interest for confirmation of goitre disorder prevalence, additional 70 cases were assessed of which 51 cases were investigated.

Results

Of the 100 out patients who were included in the study for goitre, sex wise 91 were female and 9 were male. Probably hormonal imbalance, stress, strain were the added factors in them. Age wise, nearly 76 patients in our study comes under the age of 10–40 years but goitre can cover all the age group like below 10 years—3 patients, between 10 and 19 years—20 patients, 20–29 years—30 patients, 30–39 years—26 patients, 40–49 years—18 patients and 50 and above—3 cases. Religion wise, Hindus 67 patients, Muslims 32 patients and Christian 1 patient. We even surveyed income wise group, low income 35 patients, middle 54 patients and high income 11 patients. Though it is common in low and middle income groups in this series, but goitre is geological factor rather than socio-economical factor. We also surveyed geological area like rural and urban areas and found goitre is common in both.

Taluk wise; Raichur-61, Devdurg-09, Manvi-10, Sindhnoor-07, Lingasur-06 others—07. Here Raichur taluk covers more than 60% of patients, but it spreads to all the taluks of Raichur district. If we consider the duration Group, less than 1 month—32 patients, 2–6 months—24 patients, 7–12 months—05 patients, 1 year to 2 years—18 patients, above 2 years—20 patients and above 10 years—01 patients. In this study, 56 patients turned up early (within 6 months) for check up because of obvious swelling. Another 21 patients took more than 2 years to approach us. Number of cases disease status wise, Euthyroidism—22 patients, Hypothyroidism—26, Hyperthyroidism—11. (Figs. 2, 3, 4, 5, 6, 7, 8).

Discussion

The epidemiology of goitre remains a relevant issue in areas where inhabitants suffer an environmental deficit of iodine [2]. Iodine deficiency is the most common preventable cause of mental deficiency in the world today. Iodine is the essential nutrient. The normal human requirement is 150 µg per day. Unlike many other nutrient iodine does not exist in food but is available indirectly through soil (ingested via food and water). Iodine deficiency results from an uneven distribution of iodine in earth crust, ocean water contents adequate amount. Deficiency in the soil cannot be corrected. 1.5 billion People or 30% of world population are in the area of the iodine

Fig. 1 Images of patient with Goitre

deficiency. This iodine deficiency geological rather than a socio-economical condition. It cannot be eliminated by change of the food habit. Iodine is essential for the production of the thyroxine and triiodothyronine. Failure of

Fig. 2 Sex ratio

Fig. 3 According to age

Fig. 4 According to caste

adequate iodine leads to insufficient production of these hormones. Inadequate hormone production adversely affects tissues like brain, heart, muscle, kidney and liver resulting in iodine deficiency disorders. It is corrected only

Fig. 5 According to area taluk

Fig. 6 According to income

Fig. 7 Duration of disease

by external source. Iodized salt is commonest mode of supplementation. Salt consumption per day 5–10 g. 30–100 µg of iodine can be added to per gram of salt.

Fig. 8 According to status

In Glasgow the overall goitre rate was 13.3%, in Dumfries 15.6% and Nithsdale 29.6%. In children aged 5–10 years the prevalence was similar in female and males. So, they concluded that the values for Nithsdale were significantly higher than those for Glasgow and Dumfries.

A random and induced group study was conducted to diagnose goitre. In random group total percentage of 8.7%, reaching 9.5% for women and 2.3% for men, with a 4.1:1 female: male ratio. In induced group total percentage of goitre was 14.4%, reaching 15.5% for women and 4.3% for men and female: male goitre ratio was 3.6:1, slightly smaller than that of the random group. The greater goitre prevalence in the induced group, compared with that of the random, proved statistically significant in the Chi square test ($p < 0.005$) [2].

A study was conducted and concluded that iodine deficiency is probably the most important but not the only factor leading to the high prevalence of goitre in the population studied. Such a population, it may be worth noting, school children living in urban areas, who may have had a more diversified diet and one higher in iodine intake than children living in rural areas. In areas where iodine intake is low, hypothyroidism, different degrees of intellectual impairment and even cretinism can sometimes affect a significant proportion of people, even if mean serum T4, T3, TSH level are within normal ranges [3].

In our study we consider Age wise, nearly 76 patients in our study comes under the age of 10–40 years but goitre can cover all the age group like below 10 years—3 patients, between 10 and 19 years—20 patients, 20–29 years—30 patients, 30–39 years—26 patients, 40–49 years—18 patients and 50 and above 3 cases. Religion wise, Hindus 67 patients, Muslims 32 patients and Christian 1 patient. We even surveyed income wise group, low income 35 patients,

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Conclusion

Number of goitre cases are comparatively more, which warrants further extensive survey. Probably soil and water source contain less iodine. Younger age group involved are more. Amongst Hindus 10 out of 20 in the list all community involved with this disease, it doesn't solely depends on food habits. All income groups are involved as it is geological factor responsible rather than socio-economic factor. It spreads in all taluks, so whole district comes under endemic area. The most positive sign is early turn up and hypothyroidism and goitre which run high in the society.

Compliance with Ethical Standards

Conflict of interests All authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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