

Short Article

Iodine and Thyroid Cancer in Goa

Authors

Raman Arora

Junior Resident, Goa Medical College, Bambolim, Goa

Avril Dias

Associate Professor, Department of Pathology, Goa Medical College, Bambolim, Goa

Address For Correspondence

Dr. Raman Arora

House No 305, Chandgi ram block,
Asiad village complex, Delhi-110049, INDIA

E-mail: drramanaiims@gmail.com

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Abstract:

There is a low papillary to follicular ratio in iodine deficient areas. A study of malignant thyroid tumors done over a period of 4 years in Goa shows that the ratio of papillary to follicular carcinoma in Goa conforms to a iodine deficient status of the population.

Key Words: Iodine, Thyroid carcinoma, Papillary, Follicular

Introduction:

The most frequent endocrine malignancies are thyroid carcinomas accounting for approximately 0.5–10 cases per 100,000 population.(1) The overall incidence of thyroid carcinoma is generally not considered to be influenced by iodine intake of a population whereas distribution of types of differentiated thyroid carcinoma may be related to intake of iodine.(2) In areas of iodine deficiency, relative frequency of follicular carcinoma is high, but overall, papillary carcinoma remains higher and there is a low papillary to follicular ratio in iodine deficient areas.

Materials and Methods:

The study of malignant thyroid tumors was done over a period of 4 years (2000-2003). All thyroid tumors were derived from unselected surgical material sent to the department of Pathology, Goa medical college, Bambolim, Goa from the department of Surgery and various private surgeons. The thyroids of surgical material were grossed and histological sections were prepared from every macroscopic lesion suspected to be malignant. As necessary, additional sections of available material were prepared and special stains employed, in particular congo red to identify medullary carcinoma. Histological diagnosis was made on light microscopic examination. WHO international classification was followed for typing the thyroid malignant thyroid tumors.

Results

Among 31815 specimens received over a period of 4 years, 620 were thyroid specimen and among them we found 66 malignant thyroid tumors. Papillary carcinoma was most common (54.55%) of all classified malignant thyroid tumors exceeding follicular (36.37%) and medullary (6.06%) lymphoma (1.51%) and anaplastic carcinoma (1.51%). The papillary to follicular carcinoma ratio was 1.5:1.

Table 1: Histological classification of malignant thyroid lesions

| Histological Type | Number of malignant thyroid tumors | % of total thyroid malignancies |
|----------------------|------------------------------------|---------------------------------|
| Papillary carcinoma | 36 | 54.55% |
| Follicular carcinoma | 24 | 36.37% |
| Medullary carcinoma | 4 | 6.06% |
| Lymphoma | 1 | 1.51% |
| Anaplastic carcinoma | 1 | 1.51% |
| Total | 66 | 100% |

Discussion:

Findings of the present study revealed low papillary to follicular carcinoma ratio and relative higher incidence of follicular carcinoma. Various studies like Ezaki Haruo et al 1992 (papillary-78.4%, follicular - 17.2%, papillary to follicular ratio 4.6)(3), Segovia Gomez et al (Papillary -76%, follicular -18%, papillary to follicular ratio -4.2)(4), Harach et al (papillary to follicular ratio-6.2)(5) revealed relative lower follicular carcinoma and higher papillary to follicular carcinoma ratio. Williams et al (6) found a relatively higher frequency of follicular carcinoma in Cali and Manddoza goiter endemic areas, with papillary to follicular carcinoma ratio being 1.3:1, and 0.9:1 respectively. In Northeast Scotland and Iceland (iodine rich areas) the ratio is 3.6:1 and 6.5:1 respectively.(6)

The histological pattern of malignant thyroid tumors in our study in Goa is following the histological pattern of iodine deficient places. Goa is a coastal area and people consume seafood rich in iodine. But a survey conducted by National Goitre Control Survey Team (NGST) in Goa reported total goiter rate (TGR) of 34.9% in 1993.(7) A study by Kapil et al conducted in Tiswadi block of Goa found total goiter rate of 16.6%.(8) The median urinary iodine was 5.5 mcg per 100 ml indicating moderate iodine deficiency amongst the population studied.(8) They also surveyed salt sample and found that 48.9% of salt sample did not have any iodine.(8,9) A possibility of goitrogens present in food of coastal places like Panaji was also suggested by Kapil et al

From our own work and parallel evidence already quoted we would conclude that a low dietary intake of iodine is associated with a low papillary to follicular carcinoma ratio. We would also like to conclude that the histological pattern of thyroid carcinoma in Goa is compares with the histological pattern in iodine deficient area, supporting the findings of Kapli et al.(8) The authors want to stress that Goa needs an urgent and detailed study of iodine deficiency disorders and iodisation status.

Conclusions:

Our study shows that the ratio of papillary to follicular carcinoma in Goa conforms to a iodine deficient status. Further investigations are needed to assess the overall iodine status of population in Goa and need for urgent iodine prophylaxis.

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