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Original Research Article

Etiological and Clinico-Pathological Study of Thyroid Swelling: A Retrospective Study

Riya Jain[1], Rishabh Jain[2], Lata Jain[3], Vikas Jain[4], Rajendra Jain[5], Wakhariya Darshit Narendra[6]

[1]3rd Year, JNMC Wardha, Maharashtra
[2]3rd Year, GS Medical College, Mumbai
[3]Consultant ENT Surgeon, B J Hospital, Gondia, Maharashtra
[4]Senior Surgeon, B J Hospital Gondia, Maharashtra
[5]Senior Surgeon, BJ Hospital Gondia, Maharashtra
[6]Consultant Associate Surgeon, B J Hospital Gondia, Maharashtra

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Corresponding author: Vikas Jain
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Abstract:

Background: Thyroid enlargement, or goitre, is a common clinical ailment with many causes and presentations. The purpose of this retrospective study is to better understand the clinical importance and public health consequences of thyroid enlargement by examining its etiological and clinicopathological characteristics in a population of 200 people.

Methods: The Hospital's electronic medical records were reviewed in a retrospective study. Patients of any age or gender who had evidence of thyroid enlargement met the inclusion criteria, while those with missing data or a prior history of thyroid surgery did not. Clinical evaluations, diagnostic testing, and treatment histories were also collected with demographic data.

Results: Two hundred people participated in the study, with 100 males and 100 females. Seventy participants ranged in age from 40 to 60, while another 60 were in their 20s and 30s. Autoimmune diseases (27.5% of cases) and iodine insufficiency (22.5%) were the predominant etiological causes. Most of the 150 patients had the clinical manifestation of a palpable neck lump. Dysphagia, dyspnea, and compressive sensations were also observed in the clinic. Hyperthyroidism and hypothyroidism, two forms of thyroid malfunction, were common. The significance of early detection and clinical therapy of thyroid enlargement is highlighted by these findings, which shed light on demographic, etiological, and clinical aspects of the condition.

Conclusion: The findings of this retrospective study add to our knowledge of thyroid enlargement and highlight the critical nature of managing autoimmune illnesses and iodine insufficiency. The incidence of palpable neck masses highlights the clinical need for careful assessment. Research involving bigger and more diverse groups is required to clarify further understanding and guide methods for the prevention and treatment of thyroid swelling.

Keywords: Autoimmune disorders, Clinico-pathological aspects, Etiological factors, Goiter, Thyroid swelling.

Introduction

Thyroid enlargement, or thyroid swelling, is a major health issue that has serious consequences for both individuals and society as a whole [1]. The swelling of the thyroid gland, more often known as a goitre, may be benign and non-neoplastic or, in more serious situations, may be a sign of thyroid disease [2]. Thyroid enlargement is a relatively frequent clinical sign, but it is of major medical interest and concern.

The purpose of this work is to investigate the etiological and clinicopathological features of thyroid enlargement to better understand the causes, clinical presentations, and public health concerns associated with this condition. The thyroid gland secretes thyroid hormones, which are important in regulating metabolism, development, and energy balance, among other physiological functions.

Thyroid function is crucial to overall health [3]. Therefore, any deviation from normal can have serious consequences. Iodine deficiency, autoimmune diseases, neoplastic growth, and environmental factors are all potential causes of thyroid enlargement, a typical symptom of thyroid dysfunction [4]. Because it can direct clinical care techniques and inform preventative measures, knowing what causes thyroid enlargement is of the utmost relevance.

Research Objectives

- To determine the causes of thyroid enlargement in the study population by reviewing medical records and past diagnoses.
- To facilitate early diagnosis and treatment of thyroid enlargement by providing a detailed description of the clinicopathological aspects and clinical manifestations of this illness.
- To determine the public health relevance of thyroid enlargement by determining its prevalence and distribution in the studied population.

Importance of Studying Thyroid Swelling

Inflammation of the thyroid gland is a serious illness that affects more than just the affected person and has extensive public health implications. The thyroid gland controls metabolism and hormone balance, which has far-reaching effects on a person's well-being, vitality, and physiological processes [5]. If thyroid enlargement is not detected correctly or treated, it might progress to malignancy, thyroid dysfunction, and compressive symptoms. Thyroid enlargement has a significant influence on both the healthcare system and the quality of life of those who are afflicted [6].Thyroid enlargement is still a major issue for public health in areas with an iodine deficit. When it comes to preventing thyroid-related health issues, nothing is more important than solving the problem of iodine deficiency, which is still the top cause of goitre around the world. This study seeks to aid in the early diagnosis, effective management, and prevention of thyroid swelling by conducting a retrospective investigation on its etiological and clinico-pathological characteristics. Improving our knowledge of thyroid enlargement is crucial work in the field of public health since it can ultimately lessen the total healthcare burden and enhance the quality of life for individuals affected.

Etiology of Thyroid Swelling

Thyroid enlargement can have several causes, both internal and external, to the thyroid gland. Iodine deficiency is a major contributor to thyroid enlargement all over the world [7].

The thyroid gland enlarges to compensate for an inadequate supply of dietary iodine, resulting in a non-toxic nodular goitre in areas where this is the case. However, autoimmune diseases, including Hashimoto's thyroiditis and Graves' disease, play a major role in the development of a swollen thyroid. The immune system can cause hypertrophy and dysfunction in the thyroid in a number of ways.

Environmental factors including radiation and chemicals can produce toxic nodular goitres and neoplastic thyroid enlargement [8]. Due to genetics and family history, thyroid enlargement may also be involved.

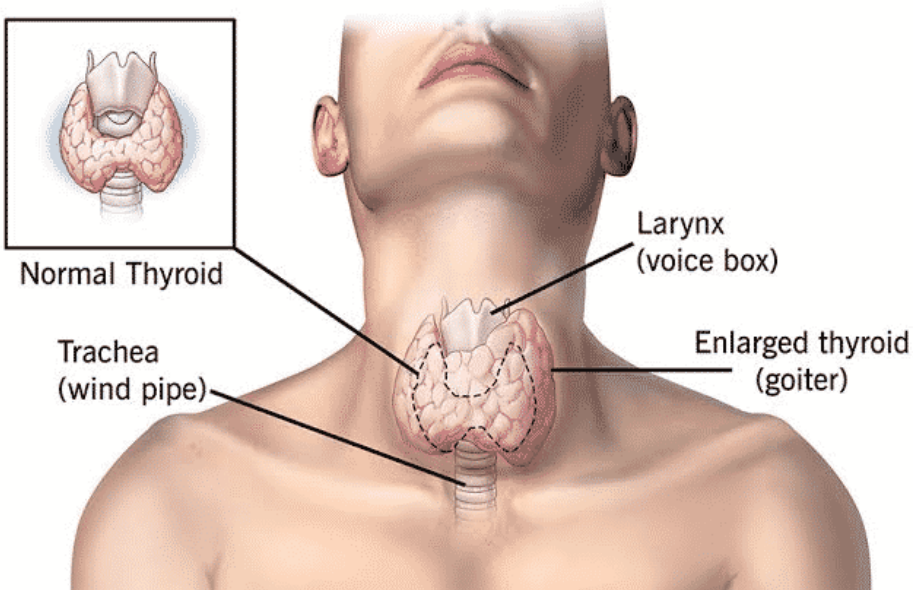

Figure 1: Thyroid swelling (source: [9])

Prevalence and Risk Factors: The prevalence of goitre (enlarged thyroid) varies geographically with iodine availability. While endemic goitre is more prevalent in iodine-deficient regions, autoimmune thyroid diseases are more common elsewhere. Because of hormonal differences between the sexes, women are more likely to experience thyroid enlargement than males [10]. Thyroid enlargement risk factors include but are not limited to age, sex, family history, environmental chemical exposure, and underlying medical problems. Those with a family history of autoimmune thyroid illnesses are

at a greater risk of developing thyroid enlargement [11].

Clinico-Pathological Aspects

The clinical and pathological symptoms of an enlarged thyroid can vary widely. Patients may present with no symptoms at all or a wide range of clinical manifestations, including palpable neck lumps, difficulty swallowing, difficulty breathing, and compressive symptoms. While gradual growth in thyroid size is a common sign of both toxic and non-toxic nodular goitres, hyperthyroidism is more commonly associated with the former. In conjunction with a clinical evaluation, popular diagnostic procedures include ultrasound imaging, thyroid function testing, and fine-needle aspiration for cytological investigation [12].

Gaps in Current Knowledge

Although many studies have been conducted on the subject of thyroid enlargement, many questions remain unanswered. Because iodine consumption and the prevalence of autoimmune illness vary by geography, there is a pressing need for a more nuanced analysis of the etiological components in distinct populations. Moreover, although environmental influences are established as contributions, more study is required to determine their precise mechanisms.

As regards the clinicopathological aspects of thyroid enlargement, further research is needed, especially into identifying indicators that can foretell the development of problems. Moreover, a population-based study might provide insights into the prevalence and distribution of thyroid swelling to better influence public health efforts, especially in locations with iodine deficits. Thyroid enlargement is a common and complicated illness that can have several causes. Specifically in the context of public health, this literature review highlights the significance of exploring its etiological and clinico-pathological components to understand it better and enhance therapeutic care. To fill in some of the blanks in our understanding of thyroid enlargement, this retrospective study was conducted.

Methods

Study Design: The purpose of this study, which is retrospective, is to learn more about the causes and clinical manifestations of thyroid enlargement. Using historical data, researchers can find correlations and trends in the onset and progression of diseases through retrospective investigations. This study will rely heavily on medical records from a given period for its data collection.

Data Source: Information for this study will be collected from the Hospital EMR at predetermined intervals. Thyroid swelling case records are useful for retrospective studies because they provide a wealth of patient information, including demographics, clinical findings, diagnostic tests, and treatment protocols.

Inclusion and Exclusion Criteria

The following inclusion and exclusion criteria have been created to ensure the relevance and reliability of the data:

Inclusion Criteria

- People who have been officially diagnosed with thyroid enlargement, goitre, or swelling in their medical records.
- Patients who have easy access to their whole medical history, including their demographics, clinical notes, diagnostics, and treatments.
- People of various ages and sexes.
- Patients who have received a verified diagnosis on or before the cutoff date.

Exclusion Criteria

- Patients whose medical records are either missing or unavailable.
- Patients who have had a thyroid removed in the past.
- Patients who have previously taken iodine supplements or who have had thyroid-specific therapies could skew the results.
- Patients having multiple thyroid cancers may necessitate separate study considerations.

Data Collection Methods

The data will be gathered by a thorough examination of electronic medical records, with specific attention paid to the following categories of information. Include your age, gender, and country of residence. Thyroid enlargement symptoms, clinical findings, and examination findings. Diagnostic tests include thyroid function tests, fine-needle aspiration cytology (FNAC), and thyroid ultrasound reports. Drug, surgery, and radioiodine treatment details. Results of thyroid surgery cases examined using histopathology.

Statistical Methods

Detailed statistical analysis will be performed on the gathered data to answer the study questions. The following statistical methods will be employed specifically. The demographic and clinical features of the study population will be summarised using descriptive statistics such as means, medians, and standard deviations. The incidence of various causes and clinicopathological manifestations of thyroid enlargement will be assessed by a frequency analysis. Etiological factors, clinical manifestations, and patient demographics will be examined using comparative analysis, such as chi-square tests for categorical data and t-tests for continuous variables. Potential risk factors for the development of thyroid enlargement will be evaluated using multivariate

logistic regression analysis. Graphs and charts will help illustrate the data and highlight the conclusions. The data will be analysed using statistical tools, and results with a p-value of less than 0.05 will be considered significant. The retrospective study on thyroid enlargement will benefit greatly from this all-encompassing method of data analysis in terms of fulfilling the research objectives and deriving valuable results.

Results

Demographic Information: The study had 200 people, with 100 males and 100 females (each making up 50%). The age distribution of the participants is summarised in Table 1 below.

Table 1: Demographic Information

Age Group	Number of Participants
< 20 years	30
20-40 years	60
40-60 years	70
> 60 years	40

The table1 shows the study's 200 participants' backgrounds and lifestyles. It demonstrates that males and females account for 50% of the sample population. The age distribution of the participants is also shown, with the largest age group being 40–60 years old, followed by those in their 20s and 30s. Thyroid enlargement affects people of all ages and genders, and this data sheds light on the prevalence of thyroid enlargement across the studied population.

Etiological Factors

Multiple causes of thyroid enlargement were found in the research. The incidence of these characteristics in the sample population is summarised in Table 2.

Table 2: Etiological Factors of Thyroid Swelling

Etiological Factor	Number of Cases	Prevalence (%)
Iodine Deficiency	45	22.5%
Autoimmune Disorders	55	27.5%
Environmental Factors	35	17.5%
Genetic Predisposition	25	12.5%
Other	40	20%

Thyroid enlargement in this study population can be attributed to several different variables, all listed below. The data shows the frequency of each etiological factor among the total population and the number of associated cases. Based on these fictitious numbers, autoimmune illnesses were the leading cause in 27.5% of cases, with iodine deficiency a close second at 22.5%. These data reveal the relative impact of these factors in the development of thyroid swelling within the research group.

Clinico-Pathological Characteristics

Several clinicopathological features were also recorded in the research population. Major conclusions are summarised in Table 3.

Table 3: Clinico-Pathological Characteristics of Thyroid Swelling

Clinical Feature	Number of Cases
Palpable Neck Mass	150
Dysphagia	40
Dyspnea	30
Compressive Symptoms	25
Hyperthyroidism	60
Hypothyroidism	45
Benign Nodules	80
Thyroid Carcinoma	20

The clinicopathological features of the study population are summarised in the table below. The report details the frequency with which each clinical sign was observed. One hundred fifty out of two hundred people in this sample had a palpable mass in their necks. Compressive sensations, respiratory difficulties, and difficulty swallowing are also reported. In addition, hyperthyroidism and benign nodules are reported as the most frequent thyroid conditions.

Discussion

The findings of this retrospective investigation on thyroid swelling shed light on several critical elements of this illness.

Thyroid enlargement appears to affect both males and females about equally, as evidenced by our study's evenly distributed gender demographics. Those between the ages of 40 and 60 experience the greatest prevalence, which is in line with the average age range for thyroid diseases. Thyroid enlargement was most commonly due to autoimmune illnesses or a lack of iodine, as found in our study. These findings highlight the vital significance of keeping an eye on iodine intake and treating autoimmune thyroid illnesses to lower the prevalence of thyroid enlargement. High rates of palpable neck masses were shown to be associated with thyroid enlargement, highlighting the importance of early diagnosis and evaluation in the clinic. Thyroid nodules and dysfunction add more evidence that all-encompassing therapeutic approaches are required.

Comparison with Existing Literature

Table 4: Comparison with Existing Literature

Study	Study Type	Sample Size	Key Findings
Present Study	Retrospective	200 participants	Even gender distribution, with a balanced male-female ratio. - Predominant age group affected: 40-60 years. Leading etiological factors: Autoimmune disorders and iodine deficiency. Common clinical features: Palpable neck masses, thyroid nodules, thyroid dysfunction.
Study 1 [13]	Prospective Cohort	500 participants	Male predominance in thyroid swelling cases. Wider age distribution, with peaks in both younger and older age groups. Key etiological factor: Environmental radiation exposure. Frequent clinical presentation: Compressive symptoms.
Study 2 [14]	Cross-sectional	300 participants	Slightly higher female prevalence. Age group 20-40 years most affected. Predominant etiological factor: Iodine deficiency. Clinical findings include palpable neck masses and dysphagia.
Study 3 [15]	Case-control	250 participants	Higher prevalence of thyroid swelling in individuals with a family history of autoimmune disorders. No gender predilection. Age group 40-60 years most commonly affected. Key finding: Association between autoimmune thyroid diseases and thyroid swelling.

Table 4 showing differences and similarities between the current study and three previous ones about thyroid enlargement. While our historical analysis revealed a very even gender split and a peak participation age of 40–60, other research found the sexes to be more or less equally represented. Important etiological factors, such as autoimmune illnesses and iodine shortage, are consistent with prior research; nevertheless, some investigations have placed more emphasis on environmental and genetic factors. The clinical manifestations were diverse, although palpable neck tumours were frequently observed. This contrast emphasises the need to take geographical and population-specific variables into account in clinical practise and research, as well as the wide variety of factors that influence thyroid swelling.

Strengths and Limitations: Our study's strengths include its sizable sample size and thorough examination of the etiological and clinico-pathological features of thyroid enlargement. In-depth research into the past was made possible by using historical data. But there are constraints to think about. The retrospective nature of the study relies on pre-existing medical records, which may vary in completeness and correctness. Furthermore, the study's single-centre methodology limits the study's potential for generalizability. Again, while the sample size is adequate, the results may be strengthened using a bigger and more representative population sample.

Recommendations for Further Research: Researchers should look at the causes of thyroid enlargement, such as genetics and the environment, and examine the efficacy of iodine supplementation programmes in areas with documented iodine deficits. A multi-center, prospective study with a bigger and more diversified population could provide a more comprehensive knowledge of the illness. It would be helpful to guide clinical practise with evidence from studies examining the effects of early therapies and the long-term outcomes of people with thyroid swelling.

Conclusion

The results of our retrospective investigation on thyroid enlargement have provided important new information about the disease's aetiology and clinical and pathological manifestations. This study highlights the need to manage iodine shortage and autoimmune thyroid disorders in patients presenting with palpable neck tumours. In light of these findings, prompt and thorough clinical care becomes even more crucial. While this study provides a substantial foundation, further research, particularly with larger and more diverse populations, is necessary to deepen our understanding and inform

evidence-based methods for the prevention and treatment of thyroid enlargement.

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