Original Article

The incidence of thyroid malignancy in multinodulargoiter in Alkindy teaching hospital.

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Abstract:

Back ground: The incidence of malignancy in multi-nodular goiter is thought to be low as compared with solitary thyroid nodule.

Objectives: Identifying incidence of malignancy in multi-nodular goiter.

Patients and Methods: This is a prospective study at Al-kindy teaching hospital from January 2013 to September 2015. 160 patient with multi-nodular goiter were included in the study (132females,28 males) their ages ranged between 17-75 years with a mean age of 35.88 years. Each of the patients had special form of detailed information including history and physical examination ,results of investigations; all the patients had near total thyroidectomy. All the specimens were fixed in formalin and sent for histo-pathological evaluation.

Results: Females affected by multi-nodular goiter more than males (132 females&28 males) with a ratio of 4.7/1 female to male ; 36.25 % of them were in the 4th decade of life ; the most common presenting symptom was mass in the neck (51.8 %) ; nodules affect both lobes +\- isthmus in 85.6% of the patients ; FNAC(fine needle aspiration cytology) in suspected nodules show atypical cells in 18% of the patients ; the pathological cause of multi-nodular goiter was thyroid tumor in 30 patient(18.7%) , (16 patient) by adenoma(53.3%) and (14 patient) by malignancy (46.7%) ; the most common malignant tumor was papillary carcinoma in 85.7% followed by follicular carcinoma in 14.3%.

Conclusion: The incidence of malignancy is quite high 8.7% in multi-nodular goiter patient which makes near total thyroidectomy as preferable procedure in the treatment of the disease.

Key words: multinodular goiter, thyroid malignancy,papillary carcinoma.

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Introduction:

The detection of thyroid nodule depend on the age of the patient; duration of the goiter and the modality used ; it reach 4-7% by palpation of the neck;40-60% by ultrasound of 7.5MHZ-13MHZ and more than 65% by autopsy study. (1-4) Fifty percent of patients with single palpable nodule will show additional nodules by ultrasound examination (3;4) .The most important ultrasound features of malignancy in thyroid nodule; are the micro calcification, irregular margins, increased vascularity; complex echogenicity and cervical lymph node enlargement with distortion of its germinal center(3)(4). The high risk factors for malignancy in multi-nodular goiter are nodular dominancy, fixity; hardness ; rapidly increasing in size, cervical lymph adenopathy, occurrences at the extremes of age, male sex and history of neck irradiation or family history of thyroid malignancy(3)(4).This variability can be attributed to the different criteria used by the pathologists and the basis of selection of the patients for operation by their doctors. (3).

Patients and methods:

This is prospective study which was conducted on 200 goiterous patients in the Department of general surgery Al-Kindy Teaching Hospital ; during the period of January 2013 to September 2015. Only 160 patients with multi-nodular goiter (132)females and(28) males their ages ranging from 17 to 75 years with a mean age of 35.88 years were included in this study .The remaining 40 patients were excluded from the study because they had non toxic diffuse goiter ; solitary thyroid nodule or grave's disease. Special form for every patient was done and the findings were filled separately including detailed history (present illness; systemic review; past medical and surgical history ; irradiation history and any family history of thyroid malignancy).Detailed neck examination to assess thyroid status and any lymph node enlargement; and assessment of vocal cord mobility by laryngoscope. Thyroid function tests (T3,T4,TSH);hematological (Hb, PCV &blood group) and biochemical investigation (FBS,BU,S.Cr) ; virology for HIV,

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HBsAg, HBcAb; chest x ray; ECG and ultrasonography of the neck to confirm thyroid multi-nodularity. Fine needle asperation cytology(FNAc) was done for 50 patients who have suspicious nodule (hard nodule; rapidly growing ;irregular and those with micro-calcification). All the patients were assessed by anesthetist for fitness for general anesthesia. Surgery (Near total thyroidectomy with identification and preservation of parathyroid glands and recurrent laryngeal nerve) offered for compressive symptoms; thyrotoxicosis; any suspicious result during the investigation and for cosmetic factor. All the specimens preserved in formalin and sent for histo-pathological processing and evaluation for any thyroid malignancy.

Results:

- Females are more affected with multi-nodular goiter (82.5%132 patients) than males (17.5% 28 patients) with ratio 4.7/1 female to male.
- The most affected patients are in the 4thdecade of age (36.25 %) 48 females and 10 males.
- The most common presenting symptom was mass in the neck 51.8% (83 patients) followed by pressure symptoms 23.75% (38 patients).

The number of nodules by ultrasound study was between tow-multiple of variable size ranging from few millimeters to few centimeter at different location in the thyroid gland).

Fine needle aspiration cytology (FNAC) was performed in 50 suspicious patients ;it showed normal follicular cells in 30 patients(60%), in 11patients the result were non conclusive (22%) and in 9 patients (18%) showed atypical cells and excisional biopsy was indicated.

The histopathological results of thyroid specimens showed colloid nodular goiter in 111patients (69.3%) ; thyroid neoplasia in30patients (18.75 %) ; 16 patients with follicular adenoma 53.3% and 14 patients with thyroid malignancy 46.66%; while thyroiditis was found in 19patients (11.87 %) table (1).

Table (1):-The distribution of histopathology according to gender

Histopathology	Colloid goiter	Adenoma	Follicular carcinoma	Papillary carcinoma	thyroiditis
Female	89	10	1	9	14
male	22	6	1	3	5
Total	111	16	2	12	19
%	69.3%	10%	1.8%	7.8%	11.87%

The most common thyroid carcinoma is the papillary carcinoma (7.8%) 12 patients (9 females and 3 males) followed by follicular carcinoma (1.8%) 2 patients.

Discussion:

Thyroid examination may fail in detecting thyroid nodule especially when the nodule is less than 1 centimeter or when its location is in the posterior surface of the gland(4). ultrasound study of the thyroid gland is a simplest and wildly available procedure in detecting thyroid nodule even when their size is of few millimeters; irrespective of its location in the thyroid gland(4-6) Fine needle aspiration cytology (FNAC) is a simple, fast, non expensive and very helpful procedure in detecting malignancy in multi-nodular goiter when the highly suspicious nodule sampled under ultrasound gaudiness. The sensitivity of FNAC in detection thyroid malignancy ranging 65-98% with specificity of 72-100%;the results frequency of FNAC can be in general 69% normal cells;10% suspicious ;4% malignant and 17% non diagnostic (7) (8) . The results of FNAC in our study were 60% normal; 22% non diagnostic and 18% show atypical cells with recommendation of excisional biopsy. Thyroid carcinoma is the most common endocrine malignancy ;the incidence of carcinoma in multi-nodular goiter is 4-17% all over the world ; papillary carcinoma is the most common thyroid cancer forming 80% of all thyroid malignancy; the size of the tumor is extremely variable, papillary micro carcinoma is an incidental findings in autopsy or in surgical specimens in the range of 4-35.6%(9). In our study the incidence of thyroid carcinoma in multinodular goiter is 8.75% which is in the same range of other regional and international studies table (2;3).

Table2:- Showing the comparison of the results of our study with regional studies.

The study	Multinodular goiter	Adenoma	carcinoma	Papillary carcinoma	Follicular carcinoma
Hilla (10)	69.3%	53%	11.8%	21%	13%
Thiqar(11)	59%	73.5%	7.8%	56.6%	26%
Aldiwania(12)	71.5%	53.83%	8.7%	80%	12%
Almousel(13)	50%	33.33%	13.35%	50%	------
Baghdad(14)	76.8%	-------	8.5%	89.5%	0.4%
Ours	69.3%	53.33%	8.7%	85.7%	14.3%

Table(3):-Showing comparison between national and our study.

Study	Colloidgoiter	Adenoma	carcinoma	Papillary carcinoma	Follicular carcinoma
*KSA/Madinah (15)	58.2%	2.4%	25.3%	87.8%	4.03%
*KSA/Asir (16)	43.7%	24.6%	13%	65.9%	4.2%
*KSA/Riyhad(17)	28.1%	27.3%	21.3%	63%	29.6%
Yemen(18)	33.7%	49%	3.9%	47,4%	29%
Ours	69.3%	53.33%	8.7%	85.7%	14.3%

*KSA= Kingdom Saudi Arabia.

The clinical problem of multi-nodular goiter in its early stage is the dominant nodule while in its late stage is the mass effect of the goiter or the hyper-thyroidisim .The indication of surgical treatment for multi-nodular goiter are:-

Suspicion or confirmed malignancy.

Thyrotoxicosis.

Compressive irretative symptoms.

Cosmetic concern.

Surgery is the useful modality in treating irretative compressive symptoms and any suspicious or confirmed malignant lesion in addition to its cosmetic result .Subtotal thyroidectomy carries low risk of recurrent laryngeal nerve injury and hypo-parathyroidisim but it shows 40% recurrence rat of multi-nodular goiter(19).

Reoperation on previous explored surgical field carry 3-10 folds increase in risk of permanent recurrent laryngeal nerve injury and hypo-parathyroidisim rendering subtotal -thyroidectomy inappropriate procedure in treating multinodular goiter (19).

Total- thyroidectomy or near total thyroidectomy is the preferable procedure for multi-nodular goiter to avoid the reoperation on the remnant thyroid tissue which is left by subtotal thyroidectomy procedures when the resulte of histopathology show thyroid malignancy. (20)

Authors Contribution:

Ayad J. Matar: study conception &design

Thamer T. Al-Ali: Data interpretation &analysis

Ali K. Al-Majidy: .drafting of manuscript& revision

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