ORIGINAL RESEARCH PAPER

Volume-7 | Issue-9 | September-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

AUDIOVESTIBULAR STUDY IN THYROID DISORDER PATIENTS AT TERTIARY CARE HOSPITAL

ENT

Syed Mohd Ahmad Assistant professor, Department of ENT, Hind Institute of medical sciences, Mau, Ataria, Sitapur-261303

Rakesh Kumar* Assistant professor, Department of ENT, Hind Institute of medical sciences, Mau, Ataria, Sitapur-261303 *Corresponding Author

ABSTRACT

Objective: To assess effect of audiovestibular in thyroid disorder

Method: Cases as well as control were interrogated for complaints related to ear, nose and throat, their complete clinical ENT examination with special attention to audio vestibular system was done according to Performa. Special designed Performa were used to collect the data .

Result: The present study includes total 90 cases of thyroid disease. Maximum numbers of patients were in the age group between 26-35 years. The numbers of Female patients were more as compare with male. Female to male ration was in present study is 3:1.Maximum number of cases had hypothyroidism followed by euthyroid goiter. Only 9.6 % cases had hyperthyroidism. Involvement of ear was maximally present in hypothyroidism. Hearing impairement was the commonest otological manifestation (28%) followed by dizziness (14%). As per tuning fork test, SND in 12 %, conductive deafness (16%), normal hearing (72%) and nobody reported mixed hearing. Tuning fork test were suggestive of the conductive deafness in 8 cases and sensorineural deafness in 6 cases of hypothyroidism. None of the hyperthyroid or goiter patients had impaired hearing.

Conclusion: Hearing imparement was seen in 28 % of the study. Hearing impairement was the most common otologic complaint.

KEYWORDS

Audiovestubular, Hearing impairement, Thyroid disorder, ENT

INTRODUCTION:

Thyroid is an endocrine gland situated in the lower part of front side of neck anterior to the trachea between the cricoid cartilage and suprasternal notch. The thyroid consist of two lobes that are connected by isthumus. It is normally 12-20 gm in weight highly vascular and soft in consistency. Thyroid hormones are produced and secreted under influence of pituitary TSH in two forms triidothyronine T3 and tetridothyronine T4 .

The storage form of the hormone is thyroglobulin a combination of thyroxin and thyroid globulin which microscopically appears as colloid hydrolysis of thyroglobulin yields thyroxin, which is circulated to tissue to act as metabolic catalyst. Under the influence of TSH , active hormones are from the gland as needs arises circulating thyroxinis bound to plasma proteins primarily thyroxin binding globulin and prealbumin. The free level of circulating hormones regulates TSH release. 50-200 mg is the daily requirement of iodine for normal thyroid hormones level, in presence of iodine deficiency hormone production will be insufficient and circulating level will be low. This leads to increase in pituitary TSH output and thyroid hyperplasia follows.

In many ways the role of the thyroid remain poorly understood one such concern the influence of the thyroid gland on auditory and vestibular system. There are both clinical and laboratory evidence that thyroid has influence on auditory vestibular system. But exact incidence is not universally agreed.

When Bircher[1] in 1883 described the impairment of hearing in patients suffering from goiter. Bhatia et al (1997)[1] reported fair number of cases of hypothyroid having deafness and vertigo. Malik et al(2002)[2] reported only deafness with minimal vestibular involvement of hearing in mild to moderate iodine deficiency. Kohonen et al(1971)[3] found no evidence for correlation between hearing and hypothyroidism. Controversy also present regarding site of involvement in case of deafness whether middle ear (Macmohan 1947)[4] cochlear Bhatia et al. 1997 or retrocochlear.

Thus there is great deal of controversy regarding the precise effect of thyroid on auditory and vestibular system. This prompted me to take up the study on Audiovestibular study in thyroid disorder.

OBJECTIVE: To assess effect of audiovestibular in thyroid disorder

Material and methods:

1. Sample Size: 90 cases has been taken for the study

2. Place of the study: Endocrinology clinic and ENT OPD of L.L.R and associated hospital Kanpur from December 2005 to 2007.

3. Patients of thyroid disease with present or past otorrhoea, tympanic membrane perforation, industrial noise exposure, treatment with ototoxic drug were not included in study.
4. 20 Person with no ear, nose and throat complaints and normal thyroid status were included in this group as control.
5. Cases as well as control were interrogated for complaints related to ear, nose and throat, their complete clinical ENT examination with special attention to audio vestibular system was done according to performa.
6. Special designed Performa were used to collect the data

RESULTS:

The present study includes total 90 cases of thyroid disease. Maximum numbers of patients were in the age group between 26-35 years. Comprising 35.56% , 31.11% were between age group of 35-45 years i.e 66.67% patients of thyroid illness had age between 26-45. The numbers of Female patients were more as compare with male. Female to male ration was in present study is 3:1.(Fig 1 &2)

Maximum number of cases had hypothyroidism followed by euthyroid goiter. Only 9.6 % cases had hyperthyroidism. (Fig 3)

Involvement of ear was maximally present in hypothyroidism. Hearing impairement was the commonest otological manifestation (28%) followed by dizziness (14%). As per tuning fork test, SND in 12 %, conductive deafness (16%), normal hearing (72%) and nobody reported mixed hearing. (Table 1 & 2)

Tuning fork test were suggestive of the conductive deafness in 8 cases and sensorineural deafness in 6 cases of hypothyroidism. None of the hyperthyroid or goiter patients had impaired hearing. The hearing loss in hypothyroidism were directly proportional to the duration of illness, longer the duration of hypothyroidism greater was the involvement of ear. (Table 3 & 4)

FIG 1 SHOWS: Age wise distribution of patients

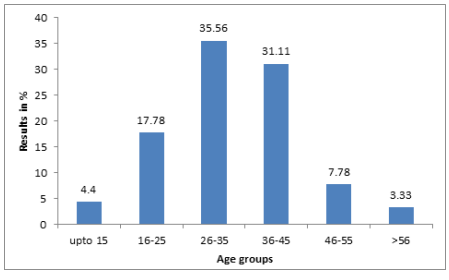


FIG 2 SHOWS: Sex wise Distribution of patients

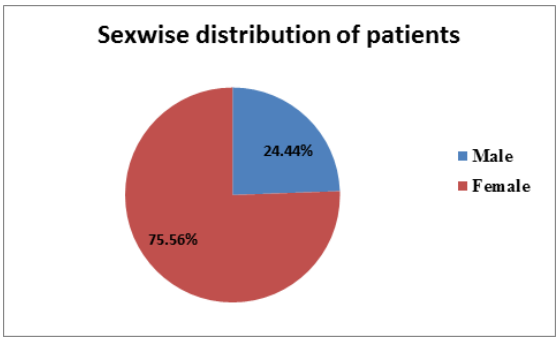


FIG 3 SHOWS: Pattern of diagnosed thyroid disease

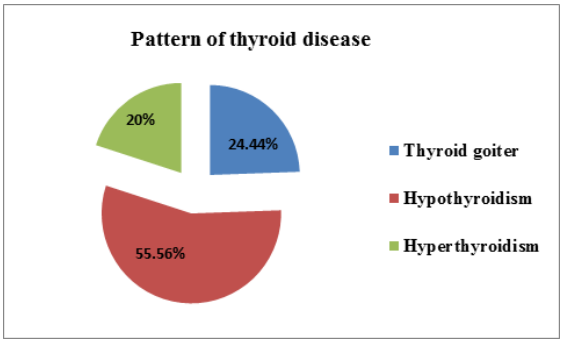


TABLE 1 SHOWS: Otological Complaints in different group of thyroid disease

SN	Otoloical symptoms	Goiter	Hypothyroidism	Hyperthyroidism
1	Hearing Impairment	0%	28%	0%
	Progressive	0%	18%	0%
	stationary	0%	10%	0%
2	Tinnitus	9.09%	12%	0%
3	Dizziness	0%	14%	0%
4	Normal	0%	54%	0%

TABLE 2 SHOWS: Type of hearing loss among the patients of hypothyroidism

SN	Deafness	Results
1	Conductive	6%
2	Sensori neural	22%
3	Mixed	0%
4	Normal	72%

Table 3 shows: Results of tuning fork test

T.F.T	Function	Hypothyroidism	Hyperthyroidism	Goiter
Rinne's	positive	84%	100%	100%
	Negative	16%	0%	0%
Weber's	Centralized	94%	100%	100%
	Latralised	6%	0%	0%
ABC	Normal	92%	100%	100%

TABLE 4 SHOWS: Duration of thyroid illness and its correlation with hearing impairement

SN	Duration of thyroid illness	% of cases with hearing impairment
1	Upto 1 years	4.17%
2	1-2 years	8.33%
3	2-3 years	16.67%
4	3-4 years	29.17%
5	4-5 years	33.33%
6	Above 5 years	8.33%

DISCUSSION:

The study was conducted on 90 patients of various thyroid disorder, to know the effect of different thyroid level upon the audio vestibular system. The thyroid diseases that considered in present study include goiter with euthyroid state, hypothyroidism and hyperthyroidism. Most of the case were hypothyroid 55.56% followed by goiter and hyperthyroidism 24.44% and 20.0% respectively.

The study was conducted in different age group. The age of the patients varied from 11 to 57 yrs. Most of the patients with thyroid diseases were in the age group 26 to 35 yrs. The percentage of such patients 36.56%. 33.11% of patients were in the age group of 36 to 45 yrs. 7.78% patients in the age group 46 to 55 yrs. 17.78% and 4.44% belonged to age group of 16 to 25 yrs and less than 14 yrs respectively. 3.33% of patients were the age group of more than 56 yrs. In our study female patients enjoyed the majority in having different type of thyroid disease.75.56% patients were female while male patients were 24.44%.Female patients outnumber male by a ratio of 3:1.

In present study most of the patients with audio vestibular involvement among various thyroid disease were hypothyroid. In present study hypo or hyperthyroidism was diagnosed by ELISA based serum T3,T4, and TSH estimation. Out of 90 patients 55.56% were hypothyroid with serum T4 level below 4.5 ugm/dl. 24.44% cases had goiter with euthyroid status.

Means et al.(1963)[5] Stated "Deafness infact a very characterstic symptom of hypothyroism". Mickl & Farme(1958)[6] reported incidence of hearing impairment to be 31% DeVos (1963) reported the incidence of impaired hearing to be 53.1%. 28% of patients in our study complained of impairment of hearing but audiometric analysis revealed the incidence of hearing impairment to be 48% lies in between reported by Mickl & Frame(1958)[6], and DeVos (1963)[7].

Post (1964)[8] observed no correlation between degree of hypothyroidism and resultant deafness. He also mentioned normal hearing in the hypothyroid state. In our study also no correlation was noticed between severity of hypothyroidism and deafness. Normal hearing was present in 52% cases. De Vos (1963)[7] and Stephen(1970)[9] reported mild to moderate hearing loss irrespective of severity of hypothyroidism. In present study 28% had mild deafness and 20% of cases had moderate deafness. None of the cases had severe deafness.

In the present study Rinne's test was found to be negative in16% ears of hypothyroid patients and Weber's test was not lateralized in 94% case indicating high incidence of bilaterally symmetrical conductive hearing loss. Absolute bone conduction (ABC) was also reduced in 12% ears signifying sensorineural loss.

The present study revealed hearing impairment in 48% patients on pure tone audiometry whereas only 28% complained of subjective hearing loss. Majority of the patients (26%) had conductive hearing impairment whereas sensorineural hearing impairment was found in 18% and mixed in4% case. All the patients with conductive hearing loss had a flat curve whereas 77.78% cases with sensorineural hearing loss and all the two cases of mixed hearing loss had high frequency loss. Only mild to moderate degree of hearing impairement was seen in present study 28% and 20% respectively. Similar study by Bhatia et al[1] and De Vos[7] and Stephens et al[9] found mild to moderate hearing imparement in their study.

CONCLUSION:

Hypothyroidism was most common disorder followed by goiter and hyperthyroidism. Hearing imparement was seen in 28 % of the study. Hearing impairement was the most common otologic complaint.

REFERENCES

1. Bhatia pl, Gupta op, Agarwal MK, Mishra SK. Audiological and vestibular function test in hypothyroidism. The laryngoscope 1977;87:2082-2089.
2. Malik V, Shukla GK, Bhatia N. hearing profile in hypothyroidism. Ind J otolaryngology & head and neck surgery.2002;54(4):285-290.
3. Kohonen A et al. deafness in experimental hypo and hyperth yroidism. The laryngoscope. 1971;81(6): 947-956.
4. McMohan BJ. Influence of constitutional factor in otological conditions. Annals otolaryngology. 1956;65:395-413.
5. Means JH, DeGroot LJ, Stanbury JS,. The thyroid and its disease. McGraw Hill Book Company, Inc. New york. 1963: 318-382.
6. Mickl SN and Frame B. neurologic manifestation of myxedema. Neurology 1958;8:511-517.
7. DeVos JA,. Deafness in hypothyroidism. The journal of laryngology & otology. 1963;77:390-414.
8. Post JT. Hypothyroid deafness. The laryngoscope.1964;74:221-232.
9. Stephens SDG. Temoporary threshold drift in myxedema. J laryngol otal 1970;84:317-321.