

Correlation between Weight of the Thyroid Gland and Height of Cadavers

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Abstract

Introduction: The thyroid gland is a very important endocrine gland, which is concerned with rate of metabolism, blood calcium level, and affects on growth and development in mammals. The size of thyroid gland varies considerably with age, sex, physiologic state, race and geographical location. So this study is to carry out the macroscopic architecture of thyroid glands of males and females. *Objectives:* To study the correlation between the weight of thyroid gland to the height of the cadavers. *Material & Methods:* Present study includes total 100 thyroid glands from cadavers, embalmed with 10% formalin of known sex from Medical colleges. *Study Periods & Designs:* Between years DEC 2012 to JAN 2014. *Statistical Analysis:* Analysed by simple statistical techniques and tests of significance including chi-square tests were applied. *Results:* The Correlation of thyroid weight and height of cadaver was studied for males. There was negative correlation between height of cadaver and weight of thyroid gland. For females when correlation of thyroid weight and height of cadaver was studied. The result showed that there was positive correlation between height of cadaver and weight of thyroid gland. *Conclusion:* In case of male subject as height of cadaver increases, weight of thyroid gland decreases. In case of female subject as height increases, weight of thyroid gland also increases.

Keywords: Thyroid Gland; Weight; Height of Cadaver.

Introduction

The thyroid is a brownish red, highly vascular earliest endocrine glandular structure appears in mammal. Weight of thyroid gland is about 25 gm [1]. The thyroid gland is a notably labile gland that varies greatly in size and structure [2]. Several authors from various countries reported the data on thyroid gland's weight but still to set a normal range considering the variations in race, age, sex and other environmental factors like iodine intake, seasonal variation as well as different measuring procedures [3]. In the routine examinations of workers who are exposed to radiation, to give full protection against the

accompanying hazards, the standard weight, size, and shape of the thyroid should be known.

Furthermore, knowledge of variations of the thyroid is substantial for surgeons dealing with head and neck surgery. Therefore, training and understanding of the thyroid anatomy and its associated anatomical variations are obligatory in order not to overlook these anomalies in differential diagnosis [4].

Material and Methods

The present study was carried out in the Department of Anatomy between years Dec 2012 to Jun 2014. Permission was obtained from the Head of Department of colleges to conduct this study. The project was submitted to Independent Ethical committee of our college. After getting the approval letter from Independent Ethical Committee, the study was started. Present study includes total 100 thyroid glands from cadavers, embalmed with 10% formalin of known sex (62 Males and 38 Females) from Medical

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colleges.

Gross and fine dissection was carried out and the thyroid gland was separated from its bed, dried with a sponge and blotting paper, and then weighed on a digital balance weight of each thyroid gland was taken in grams [3,4]. Height of cadavers was measured with the help of measuring tape in centimeter.

Observation and Results

Table 1 shows that the height of cadavers in cms, and weight of thyroid gland in gms. In 21 male cadaver's height ranged between 150-160 cms. and weight of thyroid gland was 16.21 ± 3.09 gms. It ranged between 11.3 - 21.07 gms. In 23 male cadavers height ranged between 161-170 cms. and weight of thyroid gland was 15.65 ± 2.97 gms. It ranged between 11.01 - 21.77gms. In 18 male cadavers height ranged between 171-180 cms. and weight of thyroid gland was 15.21 ± 2.89 gms. It ranged between 11.2- 20.47gms.

It indicates that in case of male subject as height increases, weight of thyroid gland decreases.

In 7 female cadavers height ranged between 140-150 cms. and shows weight of thyroid gland was 12.28 ± 4.21 gms. It ranged between 7.54 -18.34 gms.

In 17 female cadaver's height ranged between 151-160 cms. and weight of thyroid gland was 13.79 ± 2.03 gms. It ranged between 10.13 -16.31 gms.

In 12 female cadavers height ranged between 161-170 cms. and weight of thyroid gland was 14.40 ± 3.61 gms. It ranged between 6 -18.32 gms.

In 2 female cadaver's height ranged between 171-180 cms. and weight of thyroid gland was 13.05 ± 0.07 gms. It ranged between 13 -13.1 gms.

It indicates that In case of female subject as height increases, weight of thyroid gland also increases.

Table 2 shows the Correlation of thyroid weight and height of cadaver in both sexes. The Correlation of thyroid weight and height was studied for males. The correlation coefficient was determined using the Carl pearson formula. The result showed the r- value of -0.2331 which means that there was negative correlation between height of cadaver and weight of thyroid gland with p value 0.0683, which was not statistically significant. For females when correlation

Table 1: Thyroid weight (gm) in various height (cm.) of cadavers in both sexes

Sex	Height (cm)	Number (n)	Thyroid weight (gm)	
			Mean \pm SD	Range
Male (62)	150-160	21	16.21 ± 3.09	11.3 - 21.07
	161-170	23	15.65 ± 2.97	11.01 - 21.77
	171-180	18	15.21 ± 2.89	11.2 - 20.47
Female (38)	140-150	7	12.28 ± 4.21	7.54-18.34
	151-160	17	13.79 ± 2.03	10.13 - 16.31
	161-170	12	14.40 ± 3.61	6 - 18.32
	171-180	2	13.05 ± 0.07	13 - 13.1

Table 2: Correlation of thyroid gland weight and height of cadaver in both sexes

	Thyroid Weight			
	Male		Female	
	r-value	p-value	r-value	p-value
Height (cm)	-0.2331	0.0683, Not Significant	0.1696	0.3088 Not Significant

Table 3: Correlation between thyroid weight and height of cadavers in male and female

Authour O.Tanriover ³	Parameter Height	Thyroid weight Males		Females		Result Not Significant
		R	P	R	P	
Present study(2014)		0.172	0.139	-0.161	0.566	Not Significant
		-0.2331	0.0683	0.1696	0.3088	

Table 4: Correlation between thyroid weight and height of cadaver

Name of author (year)	Results in Male	Results in Female
O. Tanriover ³ (2011)	Not significant	Not significant
Enayetullah ⁷ (1996)	Significant	Significant
Sultana ⁸ (2005)	Significant	Significant
Present study (2014)	Not significant	Not significant

of thyroid weight and height was studied. The result showed the r- value of 0.1696 which means that there was positive correlation between height of cadaver and weight of thyroid gland with p value 0.3088 which was not statistically significant.

Discussion

Thyroid disorder is a common health problem among large number of endocrinopathies. About 5% of the world population is affected from various thyroid disorders. This requires medical and surgical intervention.

In 1938, Noland stated that the weight of the thyroid gland is 18-31 gms [5].

Mortensen, Woolner, Bannett (1955) studied 821 cadavers with clinically normal thyroid gland and showed that the average weight of the normal thyroid gland depends almost entirely on the age of the person and is not consistently affected by sex or geographical residence [6].

Correlation between thyroid weight and height of cadavers in present study was non-significant in both sexes, p value 0.0683 in males and 0.3088 in females. It was correlating with study of O. Tanriover [3]. In his study p value was 0.139 in males and 0.566 in females.

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Mortensen et al. observed that the average weight of the normal thyroid glands depends almost entirely on the age of the patient and is not consistently affected by the sex or their usual geographic residence [6].

Conclusion

In case of male subject as height of cadaver increases, weight of thyroid gland decreases. In case of female subject as height increases, weight of thyroid gland also increases. The present study is an approach to objective to increase the information pool and help the clinicians and surgeons in their practice.

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