

## Bacterial infections associated with thyroid disease for patients in Baghdad hospitals

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### Abstract :

The studying included collecting 104 sample from patients that are suffering from troubles in the secretion of thyroid gland hormones “ hyperthyroidism or hypothyroidism “ where that was diagnosed by hormone tests “ T3,T4,TSH “ by taking different samples “sputum simmer , nose swab ,skin swab, ear swab, urine, tonsil swab ” As for hormone tests “ T3,T4,TSH “, showed that the highest percentage was “47.9% “ at people who have hyperthyroidism specially T4 hormone at people who are suffering from inflammation of urinary tract , the highest recorded percentage was 54% at people suffering from hypothyroidism specially T3 hormone also they had inflammation of urinary tract and the most contributed bacteria in this disease was “*E.Coli*” associated to both T3& T4 hormones and the results showed that “*E.Coli*” is the most common bacteria that caused inflammation of urinary tract with “47.9%” at people have hyperthyroidism. Results also showed that *candida albicans* mushroom is the most repeatable in skin infections of fungi with a percentage of 23.2% especially in hypothyroidism of T3&T4 hormones .

**Aim of study :** dependent on bacterial infection as indicator to thyrodisme and treated of bacterial infection in thyrodisme.

**Meterial and method :** We can detection of thyroid hormones (T3 , T4 & TSH) by automated system (by Siemens Healthineers)

### Introduction :

Thyroid hormones are two hormones produced and released by the thyroid gland, namely triiodothyronine (T3) and thyroxine (T4). They are tyrosine-based hormones that are primarily responsible for regulation of metabolism. T3 and T4 are partially composed of iodine. A deficiency of iodine leads to decreased production of T3 and T4, enlarges the thyroid tissue and will cause the disease known as simple goitre. The major form of thyroid hormone in the blood is thyroxine (T4), which has a longer half-life than T3.[1] In humans, the ratio of T4 to T3 released into the blood is sometimes claimed to be quite high, but thyroid removal patient data suggests it to vary between 4:1 to 2:1, the average being 100:36 (roughly 2.8:1). T4 is converted to the active T3 (three to four times more potent than T4) within cells by deiodinases (5'-iodinase). These are further processed by decarboxylation and deiodination to produce iodothyronamine (T1a) and thyronamine (T0a). All three is of forms of the deiodinases are selenium-containing enzymes, thus dietary selenium is essential for T3 production. Edward Calvin Kendall was responsible for the isolation of thyroxine in 1915[2].

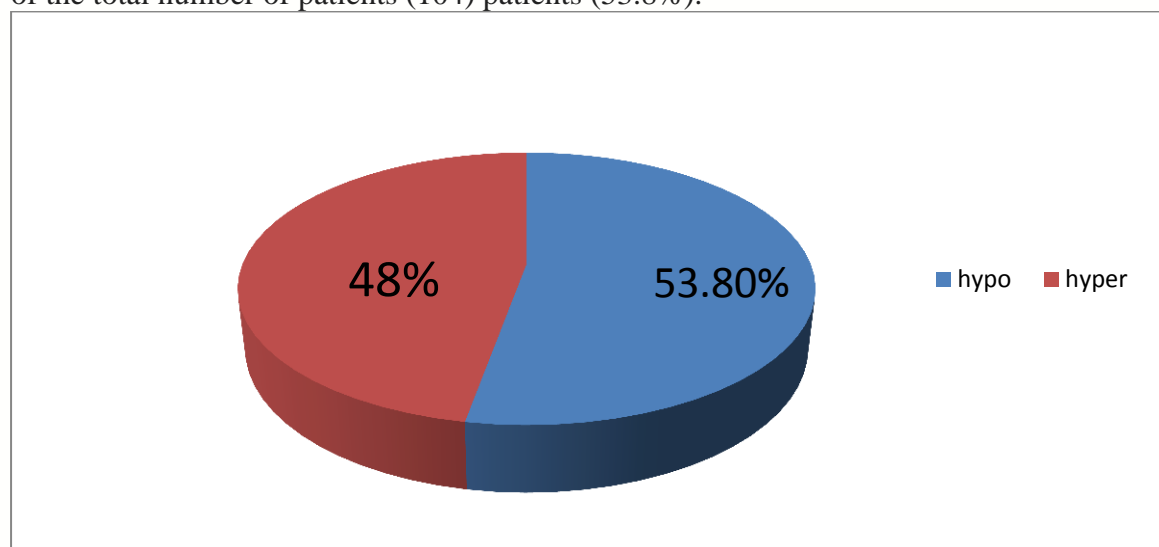
Both T3 and T4 are used to treat thyroid hormone deficiency (hypothyroidism). They are both absorbed well by the gut, so can be given orally. Levothyroxine is the pharmaceutical name of the manufactured version of T4, which is metabolised more slowly than T3 and hence usually only needs once-daily administration. Natural desiccated thyroid hormones are derived from pig thyroid glands, and are a "natural" hypothyroid treatment containing 20% T3 and traces of T2, T1 and calcitonin. Also available are synthetic combinations of T3/T4 in different ratios (such as liotrix) and

pure-T3 medications (INN: liothyronine). Levothyroxine Sodium is usually the first course of treatment tried. Some patients feel they do better on desiccated thyroid hormones; however, this is based on anecdotal evidence and clinical trials have not shown any benefit over the biosynthetic forms[4], Thyroid tablets are reported to have different effects, which can be attributed to the difference in torsional angles surrounding the reactive site of the molecule[5].

Bacteria are living things that have only one cell. Under a microscope, they look like balls, rods, or spirals. They are so small that a line of 1,000 could fit across a pencil eraser. Most bacteria won't hurt you - less than 1 percent of the different types make people sick. Many are helpful. Some bacteria help to digest food, destroy disease-causing cells, and give the body needed vitamins. Bacteria are also used in making healthy foods like yogurt and cheese. But infectious bacteria can make you ill. They reproduce quickly in your body. Many give off chemicals called toxins, which can damage tissue and make you sick. Examples of bacteria that cause infections include *Streptococcus*, *Staphylococcus*, and *E. coli*. Antibiotics are the usual treatment[36], When you take antibiotics, follow the directions carefully. Each time you take antibiotics, increase the chances that bacteria in your body will learn to resist them causing antibiotic resistance. Later, you could get or spread an infection that those antibiotics cannot cure[37].

### Results and discussion

The studying included collecting “104 “ samples of serum from patients of hyperthyroidism or hypothyroidism “T3,T4,TSH” different samples were taken as :” “sputum simmer , nose swab ,skin swab, ear swab, urine, tonsil swab”. these samples were planted on agricultural mediums as “ MacConkey agar ,Sabouraud agar ,Chocolate agar , Blood agar”. these samples were collected from 11/4/2017 – 1/5/2017 These samples were taken from “City Medicine city Hospital & Al Ameen Al Kadhimin Hospital” then studying 20 sample of healthy people .The results of the current study in Figure 1-4 and the values obtained for the triiodothyronine (T3) (Tetraiodothyronine) (T4) (Thyroid Stimulating Hormone) (TSH) patients for the patients under review showed that the number of patients with Hypothyroidism (56) of the total number of patients (104) patients (53.8%).



**Figure (1): percentage of thyroid dysfunction**

While the number of patients with hyperthyroidism (48) of the total samples of the study (104) people and the proportion of (46%) and thus the number of people infected with thyroid pixels less than people with hyperthyroidism and both sexes

The results of Table (1) show the normal values of thyroid hormones (T3), (T4), (TSH) and both sexes. The results showed that people with thyroid pixels (56) (T4) were lower than the normal values of these hormones, ranging from 0.05-0.69 to T3 (1.0 - 49.0), while the values of these hormones were higher than normal in cases of hyperthyroidism.

**Table (1): The values of hormones (T3), (T4), (TSH) for people with thyroid disease**

The results of the laboratory transplant showed that the samples of ear, tonsils, skin, ulcer, and urine were erased on the primary blood-agar base and MacConky

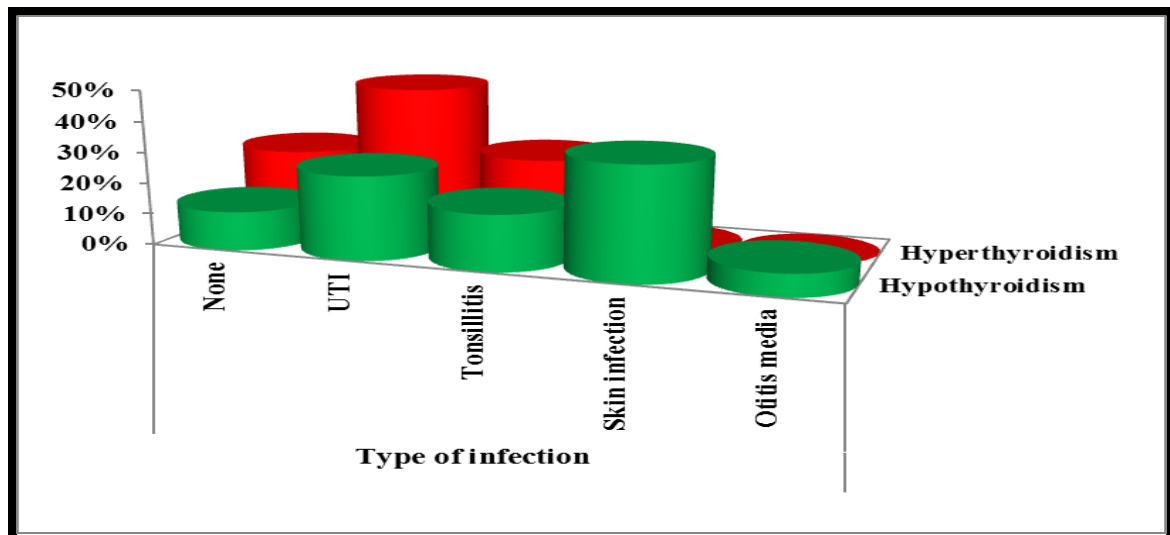
Normal hormone			Under study hormone			No. patient infection
TSH	T4	T3	TSH	T4	T3	
(0.4 -4.2)	(50-140)	(0.7-2.1)male (0.6-1.5) femal	(0.05-0.39)	(1.0-49.0)	(0.05-0.69)	Hypothyroidism (56)
			(4.3-60)	(140-254)	(2.2-7.5) male Femal (0.7-7.3)	Hyprthroidism (48)

agar, which were taken from patients after their review to receive results Thyroid hormone tests (T3, T4, TSH) showed the presence of bacteria in (58) samples (swabs), divided between (49) samples of (56) patients with hypothyroidism (87.5%) and (36) (48) patients with high thyroid and 75%, while (19) samples (patient) were given as a result of negative laboratory buds were divided between (7) samples (12.5%) of people with hypothyroidism and (1) 2) A sample (25%) of those with high thyroid glandThyroid, and thus the bacterial infections associated with cases of hypothyroidism is higher than the rise in thyroid gland.

**Table (2): Results of laboratory transplantation of samples of patients with thyroid disease**

Culture Growth				No. samples	Type
%	-ve	%	+ve		
12.5	7	87.5	49	56	Hypothyroidism
25	12	75	36	48	Hyprthroidism
18.75	19	81.25	85	104	Total

The results in Table (2) showed the bacterial species that were diagnosed using the methods in (5.3.5.2.3), (4.3.5.2-), (3-3) 5.2.3), (2.3.5.2.3), (1.3.5.2.3) FITEC tests (6.2.3 Vitek compact2 system diagnosis)That the bacterial species Escherichia coli, which causes urinary tract infection (UTI), is the most frequent in the bacterial infections associated with the abnormalities (decrease and elevation) of the thyroid gland (38) isolates were distributed (15) isolation in the cases of reduction of the gland (56) (26.7%), isolating (23) isolates of Escherichia coli (48) and (47.9%), as shown in Fig.



**Figure (2) between distribution of infection type according to thyroid diseases.**

It is worth mentioning that the diagnosis of *Escherichia coli* depends on the diagnosis of microscopy and bacteriological implantation of the computational models (Leanos *et al.*, 1996; Klein, 1994). The microscopic examination depends on the number of Pus cells in the field of microscopy under major powers. There is a close relationship between the presence of bacteria and the appearance of purulent cells in the sperm sample (85%) (Hiberman & Wald, 1997). The results of a previous study carried out by Nadia (2017) on the analysis of serotonin samples showed that the infection was (116) samples of the total samples (164) samples and (70%) positive for microbial growth. Of these samples, 38 isolates (*Escherichia coli*) and 32%. These results were very similar to those obtained in the current study.

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