A Comparison Between The Effect Of Shisha And Cigarette Smoking On Thyroid Function Of Males

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ABSTRACT

Studies show that smoking may affect physiological function of the thyroid gland functions. This study aim was to decide the effects of cigarette smoke or hookah smoke on thyroid function in males. Thyroid is considered an endocrine gland located in the neck region. The thyroid hormones are known as thyroxin(T4), Tri-iodothyronine(T3), and TSH, which play an essential role in the regulation of body metabolism. The objective of this study was to compare the changes of the thyroid hormone levels (T3, T4, TSH) in the smokers and non-smokers. The results indicated that serum TSH levels were significant change lower in the G1 group and with the control group (G3), and we found the levels of TSH hormone were significant change lower P<0.05 in the cigarette smokers compared with the control group, TSH levels were no significant P>0.05 between the hookah smoking (G2) and control group (G3). Our findings also indicated a significant increase in T3 between the G1 and G2. The results of this study indicate that smoking has an effect on thyroid function and hormones levels. Hookah smoking also has a significant effect on TSH, T3, and T4 levels.

INTRODUCTION

Smoking is the main cause of needless death [1]. Pipe and Cigarettes, hookas and other modes of smoking are very shared among every adult [2]. Cigarette smoking is a severe health problem and greatest important preventable cause of death in the world. Smoking causes atherosclerosis and lack of platelets and mainly increases the risk of cancer producing mutations which may seem until many years after man’s first cigarette. Its assessed that tobacco-connected deaths will quantity to 6.4 million in the 2015, 8.3 million in 2030 and one billion deaths through the 21st century [3,4]. Cigarette smoke comprises more 4,800 compounds, as of them; at smallest amount sixty-nine of chemicals reason the cancer disease. causes of cigarette smoking, about 90% of deaths by the lung cancer and the around 85% of by the chronic obstructive pulmonary diseases such as emphysema disease and deaths chronic bronchitis disease. The smoking is related by extensive range of the diseases similar to the cancers, diseases of cardiovascular, and strokes, pulmonary diseases [5,6]. The people smokers is die at an earlier age than people non-smokers perform. The reported an characteristic of about 10 years death of early in the smokers [7].

Tobacco smoking is the another communal health risk factor leaving hazardous effects on the endocrine system and the counting pituitary role, adrenal secretions and thyroid function [8]. smoking effect on body is mostly mediated through pharmacological action of the nicotine and the toxins. Hookah smoking is an unhealthy custom rising worldwide annually and is going to put the world health in more danger [9]. Also the thiocyanate present in the smoke is a harmful component of the smoke. The presence of thiocyanate in the smoke can cause respiratory problems. Shisha custom has a history which dates back to around 400 years and with changed terms such as narghil, hookah, water-pipe, and argil [13] it originates in dissimilar flavors, such as mint, chocolate, cherry, apple, and coconut which are frequently related with social activity where more people may share the same pipe. Most People use Shisha smoke (SH-S) during the humanity, and used daily by more than 100 million women and men in world had been burned for at least 400 years [14]. Shisha use is extensively apparent to be a harmless alternative to cigarettes because the smoke is filtered finished water but growing evidence which indicates that actively smoking shisha may be more harmful than the smoking cigarettes [3].

Thyroid usual function is energetic aimed at metabolism for cell, normal growth and increase [15]. Change in levels of serum thyroid hormones are able to main to a variety of disorders representative the biomedical of significance, features of the hormones [12,16]. Thyroid is the one of the main endocrine glands, existing directly under the larynx [17]. Hormones of thyroid gland include Tri-iodothyronine (T3), (T4) and thyroxin they are main hormones of the gland and they are essential for establishing development, metabolism, normal growth, differentiation and reservation of normal functions. 3. The thyroid function is measured by TSH hormone, whose secretion is measured by hypothalamus. Most of the T3 hormone is derived from partial de-iodination of T4 inside of the thyroid gland, and the T3 hormone considered more biologically and more active than T4. In animals, thyroid hormone is very important for usual growth and growth therefore the best concentrations of thyroid hormones act similar growth stimulators. 5. Cigarette tobacco effects of the smoke on the thyroid hormones can be causes of concern. Smoke of cigarette comprises above (4800) mixes, counting at smallest amount 200 of the toxicants or endocrine disruptors and about 80 known or supposed the carcinogens [19].

Further Agency research of the Global on Cancer organizes on smoke cigarette by tobacco as a known person carcinogen. A cigarette burner produces together...
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The typical smoke, which creates from the lips piece of the cigarette, exhaled gasped by the smoker, and lateral stream smoke. Which originates as of the lean of a flaming cigarette [20].

The aim main of this study was to show levels the of TSH, T3 or T4 hormones and effects of hookah smoke and cigarette smoke on in hormones.

MATERIALS AND METHODS

Collected 150 Blood samples from male smokers, aged (18-60) years during 3 months the samples were divided in three groups G1(cigarette smokers), n=50 G2(hookah smokers), n=50, G3 nonsmokers(control group, n=50). Total male had attended the hospital for thyroid hormone test were included in the study, which were selected from January to Jun 2019. The search was permitted by the Ethics Committee of Clinic Hospital, and informed agreement was obtained from all subjects involved in the study. All patients engaged in study were clinically diagnosed in Al-Diwanyah teaching hospital. Data organized according to gender, TSH, T3 and T4 level, were analyzed. These sample were collected by a syringe with a little of heparin to prevent blood coagulation the samples were centrifuged at 2000 rpm for 5 minutes. Using VIDAS by (biomerieus A) by Hospital. VIDAS, T3, TSH and T4 an automated quantitative test for use on the (VIDAS) family instruments, for the immune enzymatic determination of, T3, TSH and T4 in human serum (lithium heparin using the (ELFA) Technique (enzyme linked fluorescent Assay).

Statistical Analysis

The student test (t-test) was used for the quantitative data by using SPSS 23. The levels of significance different was when the possibility (p<0.05).

RESULT AND DISCUSSION

Table (1) shows the activity of thyroid-stimulating hormone (TSH) in the G1(cigarette smokers) and in controls G3. The levels of TSH were observed to be 0.09±0.002 µUI/ml in the cigarette smokers and 4±0.2 µUI/ml in the controls group. There was low a significant different in TSH levels in the (G1) group than with the control group (G3) shown, figure1.

Table 1: Concentrations of thyroid hormones in the cigarette smokers (G1) and control group (G3).

<table>
<thead>
<tr>
<th></th>
<th>NO</th>
<th>TSH µUI/ml</th>
<th>T test</th>
</tr>
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<tbody>
<tr>
<td>G1</td>
<td>50</td>
<td>0.09±0.002</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td>G3</td>
<td>50</td>
<td>4±0.2</td>
<td></td>
</tr>
</tbody>
</table>

Fig.1: Serum TSH hormone levels
Cigarette smokers (G1), hookah smokers (G2), nonsmokers (co)
Fig.2: Serum T3 hormone levels

Cigarette smokers (G1), hookah smokers (G2), non-smokers control group (G3). Data are expressed as means ± SD. In this study, we found the levels of serum thyroid-stimulating hormone (TSH) were significantly lower (P<0.05) in the cigarette smokers vs. 0.09±0.002 µU/ml than with the control group (G3) 4±0.2 µU/ml (Table 1, figure 1). Our findings also indicated a significant increase in T3 or T4 serum levels in smoking, the levels of triiodothyronine of serum (T3) were significantly different (P<0.05) in the cigarette smokers 3.5±1.1 nmol/l than control group 0.98±0.002 nmol/l, Table 1, figure 2. Significant findings higher P<0.05 in the levels of thyroxine T4 than control and cigarette smokers. We show the level 135±24 nmol/l in the cigarette smokers than control group 140±30 nmol/l, shown Table 1, figure 3. Because the level of TSH hormone was reduced in smokers, [21], and the functions of thyroid hormone can raise in the thyroid hormones during particularly serum thyroglobulin and concentrations of tri-iodothyronine. We found the levels of Thyroid hormone that’s’ affected by the smoking and by some mechanisms. Toxin of the tobacco smoke as thiocyanate, is a possible goitrogen [18]. A half-life 6 days for the thiocyanate, inhibits organification and iodide transport, as well as increases the release of iodide as of the (thyroid thiocyanate), can reason goiter in the iodine absence, although a tobacco smoke toxin as 2,3-dihydroxypropyridine, by reducing iodothyronine deiodinase that’s inhibits the thyroxine deiodination activity [22]. This provisional reason gently elevates serum (thyroxine levels) owing to its deiodinase changing action before plummeting levels [23].

Table 2: Concentrations of thyroid hormones in the hookah smokers (G2) and control group (G3).

<table>
<thead>
<tr>
<th>G1</th>
<th>G2</th>
<th>G3</th>
</tr>
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<tbody>
<tr>
<td>3.6±0.004</td>
<td>4±0.2</td>
<td>0.98±0.002</td>
</tr>
<tr>
<td>TSH µUI/ml</td>
<td>T test</td>
<td>T test</td>
</tr>
<tr>
<td>P&lt;0.05</td>
<td>4.01±0.4</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td>140±30</td>
<td>120±22</td>
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CONCLUSION

found significant differences in the T4 level P<0.05 between G2 140±30 compared G3 120±22. Also we found no significant change in T3 levels P>0.05 between G1 3.5±0.1 than G2 4.01±0.4, also we found no significant changes in T4 levels P>0.05 in G1 135±24 compared G2

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Table 3 shows highly significant mean differences among two groups in the TSH levels between the G1 0.09±0.002 and G2 3.6±0.004. We found that’s no considerable differences in the T3 levels P>0.05 between G1 3.5±0.1 than G2 4.01±0.4, also we found no significant changes in the T4 levels P>0.05 among G1 135±24 compared G2 140±30 shown Fig.3. Cigarette smoking generates substantial quantities of oxidative stress, explained by that smoke inhale by the smoking modes (shisha and cigarette) leads to increasing effects of nicotine and similar risks of alteration and inflammation by these two types of smoking methods.[26].
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28. Abbreviations: GD, Graves’ disease; GH, Graves’ hyperthyroidism; HH, et al: Smoking and thyroid disease – review of literature

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