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ASSESSMENT OF LUMBAR VERTEBRAE IN DIFFERENT GROUPS AS HYPOTHYROIDISM, EUTHYROIDISM AND HYPERTHYROIDISM PATIENTS

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ABSTRACT

When it comes to maintaining a healthy level of density of bones, hormones produced by the thyroid play a major role. Those with thyroid gland disorders may also have an increased risk of fractures. The purpose of this research is to compare the lumbar spines of people with a thyroid condition, normal thyroid function, and tachycardia. It was asked that the X-ray tech conduct the test. The traditional X-ray scan of the lower (lumbar) spine consisting of five vertebrae was taken while the patient remained upright out proximity to the X-ray equipment. The femurs of 22.8%, 24%, and 20.8% of male hypothyroidism patients, male euthyroid subjects, and male hyperthyroidism patients.

Keywords: Lumbar Vertebrae, Hypothyroidism, Euthyroidism and Hyperthyroidism

1. INTRODUCTION

Sustaining healthy bones should be an ongoing goal. Modern culture has recently placed more emphasis on bone health (Hong et al., 2018). When it comes to maintaining a healthy level of density in the bone, the hormones from the thyroid play a major role (Fischer et al., 2018). Nowadays, there are many things that might affect bone health (Suljic et al., 2018). These include not moving around enough, eating poorly, not getting enough nutrients, and even certain medical issues including problems with metabolism and hormone imbalances (Gaffney, 2018). After reaching our maximal amount of bone mass as adults, often known as the maximum amount of bone, the process of bone loss starts (Joshi et al., 2019).

Hyperthyroidism may be linked to medical issues that are specific to this population (Nguyen et al., 2018). A higher baseline metabolism is a symptom of hyperthyroidism, a condition characterized by excessive amounts of thyroid

hormones (Hu et al., 2018). Because of their increased oxygen use and heat generation, those athletes are therefore at a higher risk of heat-related disorders (Kimura, 2018). In rare cases, this similar mechanism may lead to rhabdomyolysis when energy reserves in the muscles are exhausted (Czigléczki et al., 2018). Arrhythmias, such as tachycardia and heart flutter, which cause irregular heartbeats, are another source of worry (Formenti et al., 2019). Enhanced fracture risk can result from hypothyroidism in bone, which is caused by reduced competence and inadequate bone turnover (Chong et al., 2020). Osteoporosis and fractures are attributable to overt thyroid dysfunction. Fractures have also been linked to "subclinical hyperthyroidism. It is still uncertain whether the health of bones is influenced by variations in thyroid hormones within the euthyroid range, particularly among senior men (Choi et al., 2018). The objective of the study is to evaluate the lumbar vertebrae in different groups as hypothyroidism, euthyroidism and hyperthyroidism patients.

2. MATERIAL AND METHOD

2.1. X RAY PROCEDURE

The X-ray technologist was requested to perform the examination. The subject was initially instructed to discard their apparel and jewelry and don a hospital robe. The x-ray technologist positions the patient in a manner that ensures the portion of the body to be scanned is in between the x-ray beam and the film plate. The subject was requested to recline down on an adjustable table." A lead apron is used to protect sensitive areas of the body, such as the reproductive organs and thyroid, from the harmful effects of x-rays. The subject was instructed to maintain a stationary position during the x-ray, as movement results in an indistinct image.The right femur radiograph was acquired for all subjects using a "digital X-ray machine (Multiphos, Siemens, Germany) at 45 to 80 kV and 2 mA. The femoral region would be meticulously rotated internally by 150 degrees during the acquisition of the images.

2.2. "PROCEDURE X-RAY LUMBAR SPINE"

The subject was instructed to maintain an upright posture in front of the X-ray machine while the conventional X-ray of the five lumbar vertebrae that comprise the lower (lumbar) spine was obtained (A.P view). The subject was situated between the X-ray cassette, a flat plastic cassette that serves to safeguard the film, and the X-ray tube, the equipment that generates the X-ray image. 101 Bone density assessment methodologies Bone mineral density (BMD) is a metric that quantifies the quantity of bone minerals (calcium hydroxyapatite) in a unit volume of bone tissue. Dual energy X-ray absorptiometry (DEXA) is employed to determine it, which is expressed as grams per square centimeter of bone tissue".

3. RESULT AND DISCUSSION

Figure 1

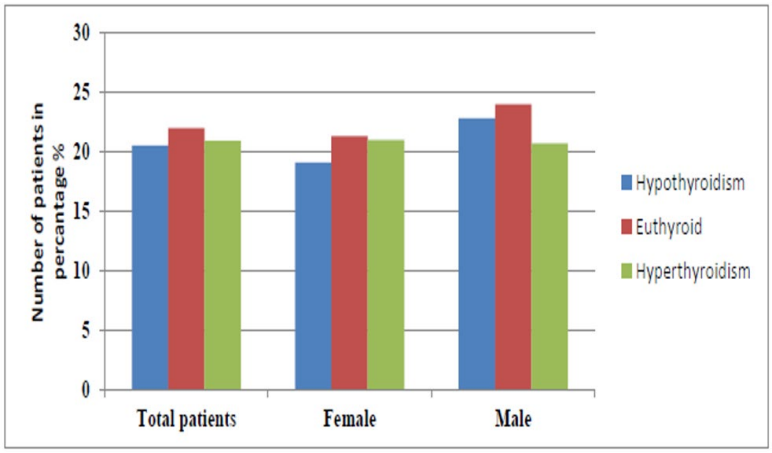

Figure 1 "Comparison of X Ray Femur in Different Groups."

Fig. 1 illustrates that the number of patients exhibiting femur alterations in all three categories, including "male and female subgroups", was not significantly different. A total of 20.5%, 22%, and 20.9% of the participants in "group I hypothyroidism, group II euthyroid subjects, and group III hyperthyroidism" exhibited femur alterations, respectively.

Similarly, female hypothyroidism patients, female euthyroid subjects, and female participants were assigned to their respective groups. In addition, the femurs of 22.8%, 24%, and 20.8% of male hypothyroidism patients, male euthyroid subjects, and male hyperthyroidism patients, respectively, underwent alterations.

Figure 2

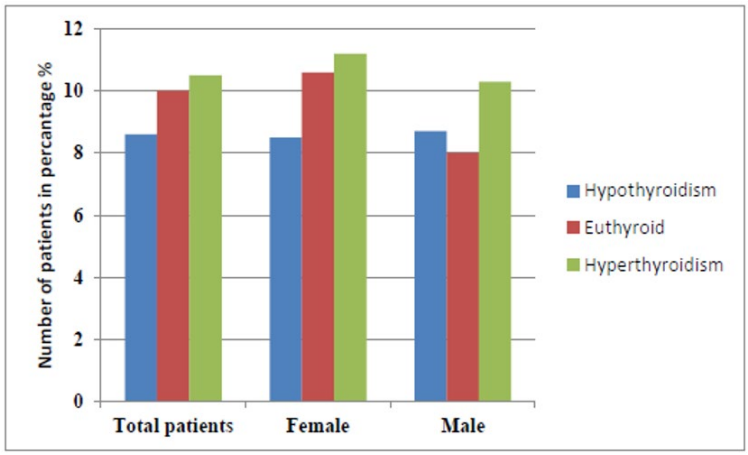

Figure 2 "Comparison of X Ray Lumbar vertebra in Different Groups."

It is obvious from figure 2 that the number of patients in "Group I hypothyroidism, Group II euthyroid subjects, and Group III hyperthyroidism was not significantly different". Moreover, there were variations in the proportions of female hypothyroidism patients, female euthyroid subjects, and female hyperthyroidism patients, which were 8.5%, 10.6%, and 11.2%, respectively. Conversely, 10% of the participants were male hypothyroidism patients, 10% were male euthyroid subjects, and 10% were male hyperthyroidism patients.

"The X-ray of the femur in all three groups, such as male and female subgroups, showed an insignificant difference, as evidenced by figure 3 (a, b, c)."

Figure 3

Figure 3 (a, b, c) Comparison of X Ray femur (Rt) AP View of all Groups. (Most of the Participants of Either **Groups** or Subgroups Showed Normal X Ray of Femur)

It is obvious from figure 3 that the "X-ray of the lumbar vertebrae in all three groups, including the male and female subgroups", showed an insignificant difference.

Figure 4

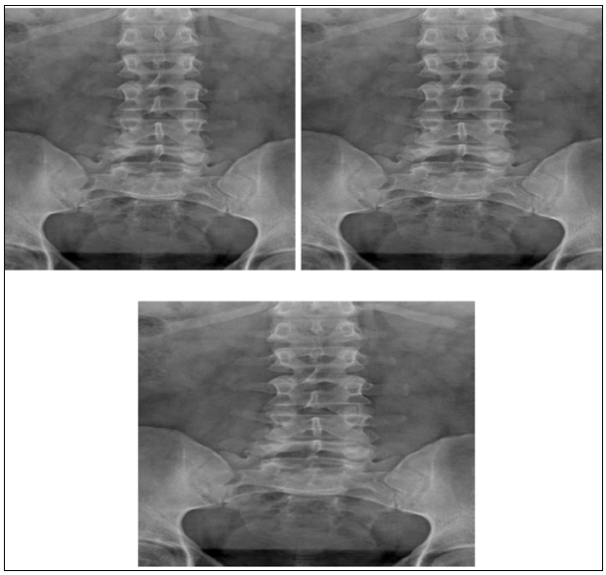

Figure 4 (a, b, c) X ray AP view Lumbar Vertebras of all Groups. (Most of the Participants of Either Groups or Subgroups Showed Normal X ray of Lumbar Vertebra)

In today's world, bone health has recently gained prominence. due to the potential impairment of bone mineral density (BMD) when thyroid your hormones rise or fall. Bone absence of minerals and loss of tissues lead to bone loss, which is a disease characterized by brittle bone. (Chong et al., 2020). Additionally, osteoporosis increases the likelihood of bone fractures and other bone-related conditions. The process of bone remodelling involves the replacement of ancient bone tissue with new bone tissue (Nguyen et al., 2018). Osteoclasts are responsible for the resorption process, which involves the metabolism of bone tissue. In contrast, osteoblasts induce bone growth. The growth of bone tissue is the responsibility of osteoblast cells (Formenti et al., 2018). Bone mineral density is a critical indicator of osteoporosis and osteopenia, and it is sustained by the bone remodeling process. “Stress, thyroid hormones, parathyroid hormones, serum calcium, and vitamin D” levels are all factors that influence the bone remodeling process (Joshi et al., 2019).

4. CONCLUSION

One of the most prevalent endocrine organ maladies is thyroid disorder, which is typically present in two forms: “hypothyroidism and hyperthyroidism.” Observations have linked changes in pancreatic operations to variation in serum concentrations of calcium and anomalies in the bones. Hypothyroidism individuals may have a lower ambient vitamin D level due to thyroid issues.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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