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The Effect of Hypertension Disease and Beta-Blocker Antihypertensive Drug on Bone Mineral Density Value at theMandibular Cortex of Mental and Gonial Regionsin Hounsfield unite

(Computed TomographicStudy)

A thesis

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ABSTRACT:

BACKGROUND:

Computed tomography is a medical technique that measures bone mineral density with a calibration standard to convert Hounsfield Units of the computed tomographic image to bone mineral density values. High blood pressure is associated with abnormality in calcium metabolism. Sustained calcium loss may lead to increased bone mineral loss in people with high blood pressure. On other hand, a nonselective Beta-adrenergic receptor antagonist has effect on bone metabolism, many studies suggested that Beta Blocker stimulate bone formation and inhibit bone desorption.

AIM OF THE STUDY:

The aim of this study was to investigate the effect of increased blood pressure and Beta Blocker antihypertensive drug on bone mineral density value at the mandibular cortex of mental and gonial regions in Hounsfield unite using computed tomography.

MATERIAL AND METHOD:

This prospective study was conducted on computed tomographic image of 150 men aged between (35- 85) years. The collected sample includes patients attended for different diagnostic purposes to AL-Shaheed AL-Sader General Hospital from November 2014 to February 2015. Data were grouped into three categories according to their blood pressure: group (1) normotensive group (n=50), group (2) Hypertensive treated for > 8 months group (n=50) and group (3) Untreated hypertensive/recently diagnosed group (n=50). Body mass index were in normal range for all study samples. Bone mineral densities were measured in each sample in both mental and gonial areas in Hounsfield

unite. Physical activities were documented by questionnaire. The data analyzed using SPSS version 21 programs loaded on a computer machine.

RESULTS:

There were a statically significant difference in bone mineral density in both mental and gonial area among the three study groups. Bone mineral density was highest in group 2 and lowest in group 3. P value was < 0.001 among the three study groups. There was a positive linear correlation between bone mineral density and the duration of antihypertensive drug used and there was a negative linear correlation between bone mineral density and duration of hypertension disease. After adjustment for age, duration and physical activities, P value was <0.001 in both group 2 and group 3. It is found that treatment for hypertension and its duration was the strongest predictor of bone mineral density followed by age and work related activities as a measure of physical activity.

CONCLUSION:

Computed tomography is a good diagnostic method to measure the value of bone mineral density in hypertensive patients. Bone mineral density is highly affected by increasing blood pressure and by antihypertensive treatment and affected by duration of the disease and the treatment.