

## Hypertension Related Bone Disorders: A Prospective Observational Approach

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### Introduction

Blood pressure that is higher than usual is referred to as high blood pressure or hypertension. High blood pressure may be diagnosed if blood pressure readings are frequently above normal. Recently, it has been found that hypertension and bone disorders share a common pathophysiology and are inter linked. Based upon this assumption, we have conducted a research to analyze the relationship between Hypertension (HTN) and Osteoarthritis (OA), a condition that affects the elderly more frequently and causes severe joint pain concurrently, due to the deterioration and inflammation of the articular cartilage. OA is known to be the main cause of disability, with restriction of activity and pain, leading to a low quality of life and a higher rate of hospitalization. At the same time after the age of 35 years, both men and women are at a risk of developing osteoporosis and usually have a low bone mineral density. In this study we have tried to explore the relationship between hypertension, osteoporosis and osteoarthritis in middle aged individuals [1,2].

### Aims and Objectives

**Aim:** To study the association between bone disorders and hypertension.

#### Objectives:

- To study the prevalence and incidence of bone degeneration in hypertensive patients.
- To compare the efficacy of anti-hypertensive in preventing bone loss.
- To analyse the pattern of bone loss in hypertensive patients.

**Study site:** This study is being conducted in Star hospitals, Hyderabad.

**Study design and subjects:** A prospective study is conducted over a period of 6 months in orthopedics department.

**Study duration:** 6 months.

**Sample size:** 320

A cross sectional study was conducted in a group of middle aged patients. The data was taken from the inpatient area of orthopedics department. A sample patient profile form was prepared and the necessary data was collected. Also a survey form was prepared for the assessment of joint pains in hypertensive patients. The survey was done in hypertensive patients admitted in various other departments as per the inclusion criteria. Around 120 active cases have been collected in the inpatient department through the patient profile form and survey was done in 200 patients. The data has been recorded in an Excel sheet for analysis [3].

### Description

#### Source of data

All essential data has been gathered from patient data collection

forms of inpatient department and survey questionnaire circulated to various departments in the hospital.

### Selection criteria

#### Inclusion criteria:

- Patients of both the genders.
- Patients of age. Male: 35-65 years. Female: 35-55 years.
- Patients diagnosed with hypertension for more than 2 years.
- Patients having SBP >125 mmHg and DBP >85 mmHg.
- Non-alcoholic.
- Non-smoker.
- Patient not having CAD, cancer, endocrine or immune disorders, severe liver, kidney or haematopoietic diseases.

#### Exclusion criteria:

- Pregnant or lactating women.
- Patients taking medications for bone disorders.
- Post-menopausal women.
- Patients having diabetes, RA, other malignant disorders.
- Most of the individuals having symptoms of OA and osteoporosis had hypertension as comorbidity.
- The patients using combination of beta blockers and diuretics had a higher bone mineral density and slower disease progression than compared to the individuals taking other antihypertensive drugs.

Hypertension was the most common comorbidity in individuals admitted in the hospital with complaints of OA/osteoporosis symptoms. These symptoms were more pronounced in female population than compared to males. We have examined middle aged men and women with hypertension and found that these individuals are at higher risk of developing OA/osteoporosis. The individuals who had hypertension for more than 3 years showed a severe bone disease. We have tried to explore the association of bone disease severity and antihypertensive drugs and we found that the individuals who took beta blockers combination drugs and diuretics combination with other anti-hypertensives showed a positive effect rather than individual drugs when taken alone. OA was much severe in patients taking ACE inhibitors/ARB's/beta blockers/thiazide diuretics alone. Through the

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survey we have found that those individuals who had hypertension for more than 2 years, have more frequent joint pains and therefore they had a high Womac score [4-6].

## Conclusion

- Hypertension could be a risk factor for developing OA/osteoporosis.
- Anti-hypertensives in combination with beta blockers and anti-hypertensives in combination with thiazide diuretics have a positive effect in maintaining bone loss.

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