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ASSESSMENT OF VITAMIN D LEVEL IN ELDER PATIENT WITH HIP FRACTURE AND COMPARISON WITH AGE MATCHED CONTROLS – A COMPARATIVE STUDY

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INTRODUCTION

Vitamin D related health issues are the major health issues faced in elderly patients .vitamin D deficiency is common in elderly patients in western world due to lack of sunlight exposure.

In India, even being a tropical country leading to increased exposure to sun, an incorrect conception that VDD is uncommon in India but it does not have any difference in the prevalence of Vitamin D deficiency from the rest part of the world. Vitamin D deficiency dependent osteoporosis above the age of 50 is shown to to have more susceptibility for pathological fracture. It have been shown that 74- 96% of the healthy Indian population have VDD.[1] VDD is been associated with varied comorbidities such as hypertension, diabetes mellitus, myopathies, inflammatory diseases, infections, and autoimmune diseases. Reduced level of 25(OH) D results in the incidence of hip and other fragility fractures like upper limb fractures.[3]

The aim of our study was to ascertain the prevalence of vitamin D3 level in the elderly patients with hip fracture and compare it with age matched controls.

METHODOLOGY

This is a prospective study conducted in department of orthopaedics MGMCRI pondicherry between december 2019 to september 2021 after obtaining ethic committee approval 156 patients were included in study, among them 56 patients who presented with hip fracture was considered as group 1 and 100 patients above the age of 60 who visited orthopaedic opd with other ailment were considered as control group 2.

After obtaining consent blood samples from both groups was obtained. Blood samples was sent for serum 25-0H vitamin D_3 levels. Holick classification was used to define vitamin D deficiency and insufficiency(<25nmol/L) of vitamin D value was considered as hypovitaminosis D.

Using the FRAX score the 10-year probability of fracture was calculated from both the groups, FRAX tool was used to assess major osteoporotic fracture and hip fracture rate in percentage, FRAX score greater than 20% are prone for major osteoporotic fractures and score greater or equal to 3% are the group of patients having increased risk of developing hip fractures. In both the patients and control subject history, their occupation was recorded.

The Patient with hip fracture the Singh's index was also calculated the level of osteoporosis. Depending upon the vitamin D values both the group of patients was started on vitamin D supplementation.

RESULTS

The average age in group A & B was ranged between 60 to 80,the percentage of male in the study population is 47% and 53% were female.74% were indoor occupants in both groups , The average Vitamin D level in group A Patients were -17.81,Group B had 22.73.

In group A 35 patients had vitamin D deficiency, 17 had vitamin D insufficiency, 7 were within normal limit

In group B 49 patients had vitamin D deficiency, 32 had vitamin D insufficiency, 19 were within normal limit

Singh s index: 37.5% of patients were grade -1,44.6% were grade -2,5.4% were grade -3,12.5 were grade -4

The FRAX score was not significant for both the major osteoporotic fracture & hip fracture

The mean Vitamin D level was 19.98 among those with indoor and 24.06 outdoor occupation respectively with P value of 0.028.

DISCUSSION

In our study we found that vitamin D deficiency was common in both the group and so vitamin D deficiency is prevalent among the elderly in our population.but a study done by Ramason R et al[9] shows that Vitamin D

deficiency and insufficiency are common in elderly patients with fragility fracture.

In our study 70% of patient those with indoor occupation, had vitamin D deficiency. Similarly, in a study done by Sowah D et al[10], in comparison with the outdoor workers, those with indoor occupation, had reduced 25 (OH) D levels.

We also found that in 80% of patient with hip fracture who had singhs index of grade 2 or less. Similarly in a study done by Lakkireddy M et al,[13] it was shown that among the 100 study participants, 94 had osteoporosis with Singh's Index grade of 3 or less.

The present study has shown that 20% had Frax hip fracture score above 3% for PROBABILITY OF PATIENT SUSTAINING HIP FRACTURE IN 10 YEARS.on correlation with vitamin D values it was not significant. Similar study done by Anar C et al,[12] it was shown that there was no significant association between FRAX score and Vitamin D.

CONCLUSION

To conclude, the present study states that vitamin D deficiency is common among elderly patients with fractures and those involved in indoor occupation. As an approach for improving the bone health and for prevention or management of osteoporosis, elderly people can have proper periodic check-up and consultation with their healthcare providers regarding their nutritional requirements. Recommended daily allowance should be met properly.

Early diagnosis and treatment of Vitamin D deficiency can help to improve the bone, muscle, and general health, thereby minimalizing falls and fractures. Furthermore, large scale multi-centric studies can yield the ethnic variations of Vitamin D and probable causal association between co-morbidities and vitamin D deficiency state on fragility fractures.

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