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AN OBSERVATIONAL STUDY- CORRELATION OF OSTEOARTHRITIS KNEE WITH BMI, AGE AND GENDER IN A TERTIARY CARE HOSPITAL IN MULLANA, AMBALA

Orthopedics

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ABSTRACT

INTRODUCTION: Osteoarthritis is the most common degenerative disorder involving the joints leading to disability amongst millions of people around the world. It is a dynamic phenomenon; which shows both the features, destruction and repair.

METHOD: A total of 100 cases above the age of 50 years attending the OPD were studied. Detailed history was taken and all the secondary causes of osteoarthritis and other pathological factors inducing osteoarthritis were excluded. X-rays were taken in AP and lateral views. Height and weight of the patients were recorded to measure the BMI.

RESULTS: The results showed that overweight and obesity were significantly associated with higher risk of knee OA. There was an Increase in BMI with increase in the severity of osteoarthritis amongst females. Amongst males an increase in BMI was also related to increase grading of OA. Highly significant correlation was found in Ahlback grading of OA and BMI. Correlation between age and Ahlback grading of OA was insignificant.

CONCLUSION: As the age advances physical performance decreases and there is an alteration of musculoskeletal and molecular structure. Females are affected more than males. As the BMI increases functional status declines in primary knee OA.

KEYWORDS

INTRODUCTION

Osteoarthritis (OA) is the most common disorder involving the joints with the symptoms present in the, hips, knees, back, hands and neck. It is known to cause degenerative changes in the joints with major clinical features as a joint pains and stiffness, leading to decreased physical activities.[1]

Osteoarthritis (OA) is the major cause of disability in people aged 65 and older and is the most commonly existing form of arthritis amongst all. Majority of adults affected by OA are over the age of 55 years. It is the outcome of clinical and pathologic range of disorders resulting in a structural and functional failure of synovial joints.[2]

Osteoarthritis causes softening of the joints and disintegration of articular cartilage accompanied by new growth of cartilage and bone at the margins of the joint called osteophytes and the capsular fibrosis.[3]

Osteoarthritis is a dynamic phenomenon; which shows both the features, destruction and repair. Knee is the most common of all joints in the body to be affected by osteoarthritis[5.] However in majority of cases no obvious cause can be found. Osteoarthritis knee is usually bilateral.[4]

It is a progressive disorder and its frequency increases with the progression of age.[5] It is a disease in which sex specific differences in prevalence are evident being more common in females than in males. However, obesity, injury to the knee, past knee surgery, and occupations related heavy work, bending of knee and lifting are also important factors.[6] Before the age of fifty, the prevalence of osteoarthritis is higher in men than in women but after the age of fifty women is more often affected than men.[7] The irreversible nature of disease and increasing prevalence of OA in developing countries is major concern. OA depends mainly on prevention of modifiable risk factors to preserve at ease movement in elderly population. Therefore, for finding out the current burden of Osteoarthritis and its association with lifestyle related factors, we undertook such study on correlation of osteoarthritis knee with bmi, age and gender.

AIM AND OBJECTIVES

To Correlate Osteoarthritis knee with BMI, Age and Gender in a population above the age of 50 years.

MATERIAL AND METHOD

This cross-sectional prospective study was conducted on hundred patients attending the Orthopedics out patient department clinic at Maharishi Markandeshwar Institute of Medical Science and Research (MMIMSR), Mullana, Ambala.

Investigations of the patients was done and patients were evaluated on the basis of radiological grading of osteoarthritis and BMI of the patients was recorded according to quetlet index.

Total of 100 patients between age groups 50 and above years, who presented with clinical features and radiographic evidence of osteoarthritis (according to Ahlbäck classification system) and were willing to get the basic investigations done from November 2015 to July 2017 were included. Cases with any underlying deformity and systemic disease related to the joint were excluded. The data obtained was analyzed so as to find out the role of various risk factors like Age, BMI and Gender in development and progression of osteoarthritis of the knee.

RESULTS AND CONCLUSION

In our study old age, female sex, obesity, hypertension, family history of knee pain were found to be the significant risk factor for knee osteoarthritis. (Figure 1-3, Table 1-2)

It was found that people above 50 years of age group had more chances of prevalence of osteoarthritis, majority of our patients were females. People who were overweight and obese or had a higher BMI had higher chances of development and progression of osteoarthritis knee. However apart from these there are variety of other correlated factors related to the development of OA.

Thus keeping weight under control, modifying our daily habits of eating and exercising regularly in any form can be taken under serious considerations to combat early osteoarthritis of knees. Understanding of changes early in the development of osteoarthritis *(early osteoarthritis)* is important, since these changes could still be reversible, and therefore, preventive treatment could be initiated to halt or reverse further progression of the disease. This is especially true in the young patients.
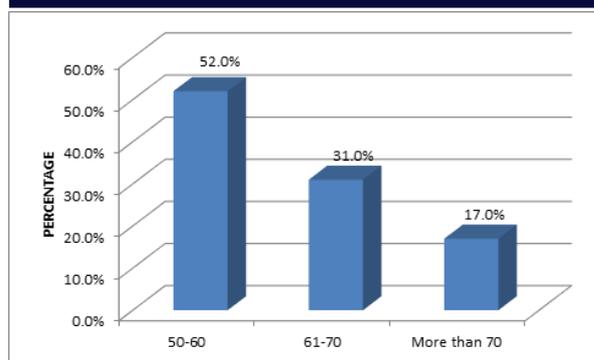
Figure 1: Graph showing distribution of OA patients among age groups
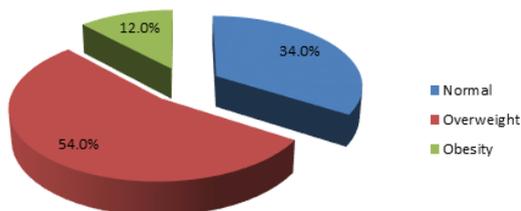

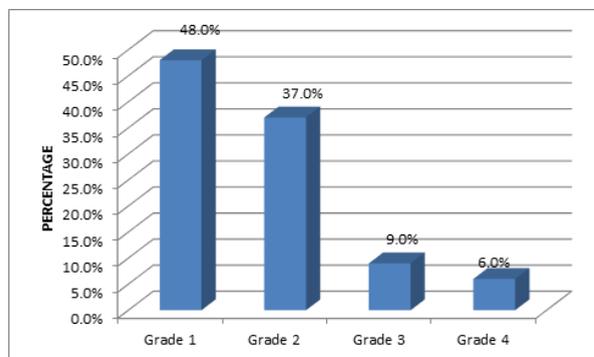**Figure 2: Graph showing distribution of OA patients according to BMI**

Figure 3: Distribution of patients according to Ahlback grading

DISCUSSION

Some of the interesting observations which have emerged from this study are as follows:

a) Incidence of osteoarthritis has been shown to increase with age (Felson, et al 1987), in our study the peak incidence (affecting 52 percent of cases was in the age group of 50-59 years 31 percent in the age group of 61-70 and 17 percent in the age group of more than 70 years.[8]

b) The females had more chances of development of osteoarthritis as compared to men and has increased tibiofemoral cartilage defects which have been supported by previous studies Hanna, Fahad S, et al (2009)[9]

c) In our study it was seen that BMI was strongly related to osteoarthritis a similar study was done by Reijman M, et al. in (2006)[10]

d) Anderson & Felson (1988) findings strongly suggested obesity as a cause of knee osteoarthritis. In our series, 54 percent had overweight in relation to their age confirming to the other studies done in the past. Further the obesity was the cause rather than effect of osteoarthritis knee as it was seen that obesity did not increase after the onset of knee pain.[11]

e) It was also seen that that that people who were obese and had raised levels of BMI had more changes in the morphology of their knee as compared to others. Eckstein F. et al (2009)[12]

f) In the series of our studies all the patients presented with osteoarthritis a total of 66 percent of patients were overweight and obese according to their BMI indicating a strong correlation between BMI. More the obesity more is the severity of osteoarthritis also seen in studies done in the past.[13]

g) In previous reports (Kohatsu Neal 1989) osteoarthritis was found

to be two or three times more likely in heavy workers. Our study showed that moderate home workers were affected maximum (52 %). The working habits were independent of osteoarthritis. There may be some other factors associated like anthropometric factors in term of differences in leg alignment in our population. There is a possibility because there is more osteoarthritis with varus of the knee in Orientals than in Caucasian.[14]

h) In our study it was seen that BMI increases the progression of knee osteoarthritis as supported by Isbagio H. et al (2004) also related an increase in BMI overweight doubles the risk of leads to OA in men.[15]

i) Pain was one of the most important factor with which the patients present in the OPD and it was seen that the patients with more pain had raised BMI much above normal level as also seen in the studies done by Ghroubi S.[16]

j) Maximum number of cases were in radiological grade 1 and grade 2 of Ahlbäck radiological grading of osteoarthritis suggesting that most of the patients seek attention after the disease has progressed beyond clinical symptoms to radiological features.

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