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Assessment the association between Cigarette smoking and osteoarthritis in Mosul city

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A R T I C L E I N F O

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ABSTRACT

Background: The most frequent type of arthritis is osteoarthritis. Degenerative joint disease is often known as "wear and tear" .arthritis. It most commonly affects the hands, hips, and knees

Objective(s): The objective of this study is to Assessment the association between Cigarette smoking and osteoarthritis

Patients and Method :In this research, a case-control study design was used in Ibn-Sena , Al-Salam Teaching Hospital and Mosul General Hospital in Mosul, Iraq, from June 1, 2021 to September 30, 2021. A total of 100 patient with knee osteoarthritis were included as cases in this study, with another 100 patient who did .not have knee osteoarthritis serving as controls

Results: The findings of the study suggest that gender has an impact on osteoarthritis. According to the findings, osteoarthritis strikes older women more frequently than it does in men. .Osteoarthritis is no associated with smoking

Conclusion: The lack of a link between smoking and the risk of osteoarthritis of the knee, may be due to the nature of the sample, the majority of which are women who may not smoke, which is in .agreement with the literature

Recommendations: More research is needed on the metabolic consequences of smoking on knee osteoarthritis with a bigger sample size so that gender-based disparities in smoking habits and Knee Osteoarthritis incidence may be assessed.

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Introduction:

Osteoarthritis (OA) is characterized by a progressive loss of articular cartilage, as well as subchondral bone thickening, bony outgrowths (osteophytes) at the joint borders, and moderate, persistent nonspecific synovial inflammation [1]. The fundamental pathogenic characteristic of Knee Osteoarthritis (KOA) was formerly thought to be cartilage damage alone, but this notion has since changed, and OA is now widely understood as a disease that affects the whole joint (bone, muscle, ligaments, and synovium)[2, 3].

Smoking is well recognized as a substantial risk factor for a variety of ailments, including cancer, diabetes, and cardiovascular disease [4], Alzheimer's disease , and Parkinson's disease [4]. Tobacco use has been linked to an increased risk of back discomfort and rheumatoid arthritis [5]. Contrary to popular belief, smoking has been linked to a reduced risk of osteoarthritis (OA) [6]. It's unknown what processes, if any, are responsible for this behavior [5]. Smoking, on the other hand, has been linked to a higher incidence of cartilage loss and knee discomfort in those with OA [1, 4]. The impact of smoking on the development and course of symptomatic knee osteoarthritis, one of the most common causes of impairment in the elderly, remains unknown. [2, 3]

The objective of this study is to determine the Possible association between smoking and knee osteoarthritis.

patients and method:

The present case-control study was conducted in the Rheumatology Consultation Unit in Ibn-Sena , Al-Salam Teaching and Mosul General Hospital, Mosul, Iraq. The period of data collection was eight months, from the 1st of June, 2020 to the 30th September, 2021. A total of 100 individuals diagnosed with knee OA represented the cases of this

study, Method of case collection was dependent on rheumatologist's diagnosis which is based on the diagnostic criteria of knee osteoarthritis (OA) established by the ACR and confirmed by radiographic film, Criteria of knee osteoarthritis include the presence of knee pain plus at least three of the following characteristics, Age greater than 50 years, Morning stiffness lasting less than 30 minutes, Crackling or grating sensation (crepitus), Bony tenderness of the knee, Bony enlargement of the knee and No detectable warmth of the joint to the touch. another 100 individuals free from knee OA were included as controls, Controls were individuals free from any joint symptoms who attended the outpatient Medical clinic of Ibn-Sena Teaching Hospital, and Al-Salam Teaching Hospital Mosul, Iraq. They were unmatched individuals for both age and sex variables with the cases and they were collected consecutively.

The researcher gathered data from cases and controls by direct interview techniques, including name, age in years, sex, and smoking (current smoker) . Ethical consideration: A verbal consent have been taken from all study participants before data collection. SPSS (version 12) statistics software has been statistical analysis. To detect the statistical correlation or differences between cases and controls, the 95 percent confidence interval (CI) and Chi-square (X2) test for contingency tables were utilized. P-value of < 0.05 was used to determine the presence of significance.

Rustle

Table (1) depicts the age distribution of cases and controls. The bulk of cases and controls (72 % and 53 %, respectively) were between the ages of 45 and 64. Knee OA is more common in women over 45 years old than in younger women (P-value = 0.0001).

They accounted for 65% of cases, whereas females over 45 years old made for 31% of controls, demonstrating a strong association. In males, however, older age appears to be a risk associated with the development of knee OA, while the association is not significant (P-value = 0.308).

Table (1): Association between knee OA and age of the study population

factors		Cases		Control		O.R	P-value *	C.I
		No.	%	No.	%			
Age	Female ≥ 45 years	65	65	31	31	4.956	0.0001	2.025-12.334
	Female < 45 years	11	11	26	26			
	Male ≥ 45 years	18	18	27	27	1.778	0.308	0.518-6.284
	Male < 45 years	6	6	16	16			

* Based on x^2 test

Table 2 shows Males accounted for 76 % of cases in controls, whereas females accounted for just 57 % of cases. There is a substantial connection between knee OA and female gender (P=0.007), according to this study. no association between smoking and knee osteoarthritis development (p-value = 0.750).

Table (2): Association between knee OA and gender of the study population

factors		Cases		Control		O.R	P-value*	C.I
		No.	%	No.	%			
Gender	Female	76	76	57	57	2.389	0.007	1.249-4.588
	Male	24	24	43	43			
Smoking habit	Smokers	28	28	26	26	1.107	0.750	0566-2.167
	Non smokers	72	72	74	74			

* Based on x^2 test

DISCUSSION

The average age of knee OA patients in this research was 54 years. This conclusion is similar to that of Bliddal et al 2011 [7], who discovered that the average age of cases of knee OA was 53.5 years, although Ringdahl et al. 2011 [8] discovered that the average age of cases of knee OA was 51 years, which was somewhat lower than our findings.

In this study, a statistically significant relationship between females over 45 years of age and the risk of knee OA was identified (P=0.0001). In men, however, the connection was not significant (P=0.308). This finding is consistent with Sheikh et al., 2014 [9], and McWilliams findings in a case-control study conducted in Indonesia in 2011 [10], They discovered a significant link between female age greater than 45 years and the risk of knee OA (O.R=9.34, CI:4.77-18), but no significant association between male age more than 45 years and the risk of knee OA (O.R=9.34, CI:4.77-18).

There is no relationship between smoking and the development of knee OA, according to this research (OR =1.1). This finding is consistent with Hui et al (2011), who showed no significant connection between smoking and the development of knee OA in a cross-sectional study (OR = 1.34, 95 percent CI 0.68-2.)[11] Smoking is a protective factor against knee OA, according to Hui et al. (2011) [11] (O.R= 0.74, CI: 0.55-0.98). There's no biological reason to believe that smoking can assist you avoid OA. Smoking can aid weight loss and protect joints from mechanical stress.

Anderson and colleagues revealed a protective relationship between smoking and osteoarthritis (OA), and the Framingham research was one of the first to establish this idea

Bansal et al 2012 [12] .

Some epidemiological studies have found a protective impact of smoking in OA, however this is most likely erroneous. It might be due to selection bias, which occurs frequently in hospital settings when control participants have smoking-related illnesses and studies that aren't specifically meant to look into smoking. Such research require critical evaluation Abdul-Qahar et al 2011 [4].

Smoking behaviors were shown to be lower in KOA patients than in normal people in this investigation. Despite adjusting the data for age and BMI, it was shown that smokers had a lower incidence of KOA than nonsmokers; this is consistent with earlier research Venkatachalam et al 2018 [13]

The present study has limitations, the first of which is the small sample size; the second is that we were unable to determine the risk of smoking on cartilage loss in KOA patients, limiting our ability to account for all possible confounders in analyses, especially given the number of potential mechanisms by which cigarette smoke could harm articular cartilage. The discovery that cigarette smoking contributes to knee osteoarthritis development is significant since it is a potentially modifiable risk factor. The link between smoking and symptomatic knee osteoarthritis has only been studied in a few research Venkatachalam et al 2018 [13].

Conclusion

That there is no link between smoking and the risk of knee osteoarthritis, may be due to the nature of the sample, the majority of which are women who may not smoke, which is consistent with the literature.

Recommendations

More research is needed on the metabolic consequences of smoking on knee osteoarthritis with a bigger sample size so that gender-based disparities in smoking habits and Knee Osteoarthritis incidence may

be assessed.

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