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Original Article

Co-morbidities in Patients Presenting with Gout at Tertiary Care Hospital Peshawar, A Cross Sectional Study, 2021 Pakistan

Mian Saleem Shah[1], Muhammad Mohsin Sajjad[2], Suleman Khan[1], Zia Ullah Khan[3]
Rheumatology Division[1], Emergency Department[2], Department of Medicine[3], Lady Reading Hospital, Peshawar.

Abstract

Background: Gout is one of the most prevalent inflammatory arthritis in the world. It is associated with non-modifiable factors like age gender and genetics and modifiable risk factors like life style changes.
Objective: To determine the co-morbidities of gout in patients presenting at tertiary care hospital Peshawar.
Study type, settings & duration: A descriptive cross sectional study was conducted at Department of Rheumatology, Lady Reading Hospital, Peshawar from January 2021 to August 2021.
Methodology: In this study a total of 323 patients fulfilling the inclusion and exclusion criteria of Gout were observed. All the patients in age between 16-80 years, either gender presenting with gout were included in the study. Gout was diagnosed as per American College of Rheumatology (ACR) Gout Classification Criteria.All the information i.e. age, gender and comorbidities were recorded and were analyzed in statistical software SPSS version 23.
Results: A total of 323 patients were enrolled in the study, mean age was 42 with SD ±12.49,female predominance was noted with percentage of 71.8%.The most common comorbidities associated with gout were hypertension(61.6%) and obesity (68.1%). We had patients with other co-existing inflammatory and non-inflammatory Rheumatological diseases. These included seropositive and seronegative Rheumatoid arthritis, Polymyalgia Rheumatica PMR, connective tissue disorder CTD and psoriasis were rarely reported. Among non-inflammatory RMDs, vitamin D deficiency was found to be highly prevalent, followed by Osteoarthritis, Spondylitis and Radiculopathies.
Conclusion: Our study concludes that the most common co-morbidities of gout were hypertension and obesity followed by other Rheumatologic diseases (RMDs) and vitamin D deficiency.
Key words: Gout, gender.

Introduction

Gout is one of the most prevalent inflammatory arthritis caused by the increased breakdown of both exogenous and endogenous purines hence resulting in overproduction of uric acid.[1] It affects 8.3 million Americans (6.3 million men and 2.2 million women) roughly 3.9% of the total US population and 2.5% of the general population of UK.[2,3] Clinically, gout is considered as a preferential male disease; however the risk of gout is found to be increased particularly in aging female population.[4] Women comprise of 5% of all the gout patients however the incidence of gout in women has doubled over the past 20 years.[5] According to a database in UK, incidence of gout in premenopausal women is 1/10,000.[6] Several studies states that over the age of 60 years, approximately half of the gout patients diagnosed will be women.[7] Research has shown gout to be an economic burden, associated with various modifiable risk factors like lifestyle and non-modifiable risk factors such as age, sex, ethnicity and genetics; however, there is paucity of clinical trials about the primary prevention of the gout.[8] In Pakistan, the exact prevalence of Gout is unknown.[9] Very fewer studies have been conducted on crystal arthropathies; however a local study showed highest

Corresponding Author:
Muhammad Mohsin Sajjad
Emergency Department
Lady Reading Hospital, Peshawar.
Email: drmohsin345@gmail.com

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Authors Contribution

MSS conceptualized the project. SK did the data collection. ZUK performed the statistical analysis. Literature search, drafting, revision & writing of manuscript were done by MMS.

burden of gout in men in their late 40s; with a male to female ratio of 3:1.[10] Aim of the present study is to evaluate the co-morbidities of gout in KPK. As no such study has been conducted on this topic, so this study will provides us the latest and updated statistics regarding co-morbidities of gout in KPK. More over the results of the present study will be shared with other health professional for timely diagnosis and better management of gout.

Methodology

This was a descriptive cross sectional study which was carried out at Rheumatology Department of Lady Reading Hospital, Peshawar from 1st January 2021 to 7th August 2012. A total of 323 patients, fulfilling the inclusion criteria of Gout during the 7 months period were all included in the study**.** All the patients in age between 16 to 80 years, either gender, presenting with gout were enrolled in the study through emergency and OPD department of LRH Peshawar. The purpose and benefits of the study was explained to the parents/ patients and a written informed consent was obtained. Patients with uric-acid lowering drugs in the last 4 weeks, patients with peptic ulcer disease, patients with serious hematological disorder, patients with serious cardiac disorder, patients with aspirin-induced asthma or its previous history, patients who have twice as high AST or ALT, patients with secondary hyperuricemia were excluded from the study.

Detailed history, clinical examinations were performed as per hospital protocol. Gout was diagnosed as per American College of Rheumatology (ACR) Gout Classification Criteria.[11] Rheumatologists' physical exam findings of tophi and positive Tram Track sign on musculoskeletal ultrasound, patient assessment of pain and raised serum uric acid levels from laboratory tests within 10 days of rheumatologist visit were included in documentation.

All the Information i.e. age, gender, comorbidities (hypertension, obesity, serum uric acid, vitamin D deficiency, other RMDs) was recorded**.** An exclusion criterion was strictly followed to avoid bias in study results. All the data was analyzed in statistical software SPSS version 23. Numerical variables like age was expressed in term of mean and standard deviation while categorical variables including gender, comorbidities (hypertension, obesity, serum uric acid, vitamin D deficiency, other RMDs) were expressed in terms of frequency and percentages. Comorbidities were stratified with respect to age and gender to see effect modification. Post stratification chi square test was applied in which p-value ≤0.05 was considered as significant value.

The Ethical approval was obtained from Institutional Review Board of Lady Reading Hospital/ Medical Teaching Institution, Peshawar.

Results

A total of 323 patients with similar symptoms visiting the out-patient Rheumatology clinic were recruited in the study. Mean age was found to be 42 years, minimum age was 16 years and maximum was 80 years, while SD was 12.49. Gender distribution was female predominated with 28.2% men and 71.8% women (C1 = 95%) (Table-1).

Table 1: Gender distribution with comorbidities and medications.

Demographic Data		
Age:	Mean 42years with SD ± 12.49	
Gender:	Female =71.8% Male =28.2%	
Co-morbidities	*Frequency (n)*	*Percentage (%)*
Hypertension	199	61.6
Obesity	220	68.1
Uric acid level(6 to 7.0)	70	21.7
Uric acid level >7	253	78.3
Vitamin D deficiency	97	30
Other RMD	226	70
Medications		
Allopurinol	114	35.3
Feboxustat	154	53.9
Allopurinol with steroids	13	4.0
Feboxustat with steroids	17	5.3
Colchicine	5	1.5
Vitamin D supplements	97	30

The overall burden of Rheumatologist's reported comorbidities showed hypertension to be more prevalent with female predominance. Obesity was also common in women. 78.3% had serum uric acid levels higher than 7.0 while 21.7% had higher uric acid levels but below 7.0.We had patients with other co-existing inflammatory and non-inflammatory RMDs. These included seropositive and seronegative Rheumatoid arthritis as inflammatory RMDs. Polymyalgia Rheumatica PMR, connective tissue disorder CTD and psoriasis were rarely reported. Among non-inflammatory RMDs, vitamin D deficiency was found to be highly prevalent, followed by Osteoarthritis, Spondylitis and Radiculopathies. Trends in medications shows that mostly patients were treated with Febuxostat and steroids along with Vitamin D supplementation; apart from it, patients were also prescribed Allopurinol and Colchicine. NSAIDs and over the

counter supplementation for gout and hyperuricemia were routinely used both in men and women (Table-2).

Table 2: Stratification of co-morbidities with age and gender.

Co-morbidities		*16-40 years*	*46-80 years*	*p value*
Hypertension	Yes	96	103	0.311
	No	67	57	
Total		163	160	
Obesity	Yes	112	108	0.815
	No	51	52	
Total		163	160	
Uric Acid	≤7	41	29	0.125
Level	>7	122	131	
Total		163	160	
Vitamin D	Yes	111	115	0.459
Deficiency	No	52	45	
Total		163	160	
Other RMD	Yes	117	109	0.474
	No	46	51	
Total		163	160	
Co-morbidities		*Male*	*Female*	*p value*
Hypertension	Yes	59	140	0.455
	No	32	92	
Total		91	232	
Obesity	Yes	61	159	0.794
	No	30	74	
Total		91	232	
Uric Acid	≤7	20	50	0.933
Level	>7	71	182	
Total		91	232	
Vitamin D	Yes	55	171	0.019
Deficiency	No	36	61	
Total		91	232	
Other RMD	Yes	65	161	0.720
	No	26	71	
Total		91	232	

Discussion

It was observed that despite the fact that gout being male gender associated disease, women with gout had predominated men in numbers at the outpatient rheumatology clinic of our study setting. Our study was similar to the studies demonstrating greater number of women to have gout.

Our study also showed women having greater burden of co-morbidities like obesity and functional impairments. The study has also concluded more female gout patients having hypertension, the association however is not significant. International studies have reported that most women have gout in their post-menopausal years, and are usually reporting gout a decade later as compared to men.[12] Further because of the later age of onset of gout in women, mostly patients suffer from comorbidities like hypertension and renal insufficiency.[13,14] An important reason of delay in gout diagnosis were the coexisting diseases with similar complaints which were most probably the consequences of onset of old age.[15]

Some other clinical features of gout also had gender based variations in the current study. Our study reported obesity to be more prevalent with gout amongst female population. The association however is insignificant. Relationship of obesity or high BMI according to a study conducted by Stephen P Juraschek and colleagues has been reported to be similar in both genders.[16]

Women with oligoarthritis might come up with quite atypical presentation of symptoms, which may lead to delayed diagnosis of gout.[17] Women in our study also had podagra alongside other joints involvement. Hyperuricemia is one of the most significant clinical manifestations of gout.[15] Higher uric acid levels i-e; >7.0 were reported in our patients; however, gender variations were not significant. It is also not uncommon to have underlying or coexisting RMDs. Vitamin D deficiency and gout have been found significantly associated in various studies but the causal association is still questioned.[18] In the current study a greater number of females as compared to the male study participants having gout suffered from deficiency of vitamin D and the association was found to be significantly strong and their activity improved with vitamin D supplementation. Furthermore, our study concluded that association of age and deficiency of vitamin D amongst gout patient was insignificant.

There are several limitations to our cross sectional survey. Gout can possibly be affected by various confounders which we couldn't measure. Patient's self-reported symptoms and history was considered as primary source of information. We did not have sufficient cases to measure the causal effect and association of vitamin d association with gout. The unavailability of past medical record for the coexisting comorbidities was also a limitation of our study.

Our study concludes that the most common co-morbidities of gout were hypertension and obesity followed by other RMD and vitamin D deficiency.

Conflict of interest: None declared.

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