

# Gouty Arthritis - Analysis of Gender Disparities

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## ABSTRACT

**Introduction:** Gout is the most common emerging disease world wide specially in the developing countries. Aim of the study was to identify and describe any differences in risk factors and clinical manifestations of gouty arthritis in males and females.

**Material and Methods:** Prospective study of 28 men and 22 women with gouty arthritis. Patient characteristics, risk factors and clinical spectrum was studied and analysed for any disparity between men and women.

**Results:** The age of onset of gout was a mean 5 years later in women (54.45 years vs 49.78 years). Podagra (40.90% vs 21.42%) and polyarthritis were common in women. On the other hand men had higher frequency of comorbidities (82.14% vs 68.18%) commonly obesity and hyperlipidemia. Alcohol use was found exclusively in men (64.28% vs 0%). Diuretic use was found to be similar in both sexes (14.28% of men vs 18.18% of women). Ankle joint was commonly affected in men.

**Conclusion:** Present research shows that there exist gender disparities in risk factors for gout, better understanding is required to understand the nature of disease.

**Keywords:** gout, arthritis, gender, podagra, risk factors, differences.

## INTRODUCTION

Gout is the most common inflammatory arthritis with world wide distribution. Historically gout was considered as a male disease, but it is not that uncommon in females. The incidence of gout in women has doubled in the past twenty years.<sup>1</sup> This increase in the incidence and prevalence of gout in women is due to increased longevity and rise in the associated comorbidities including obesity, hypertension, diabetes mellitus, chronic kidney disease and use of diuretics.<sup>2,3</sup>

Since gout is recognized as a disease affecting men, gout in women may be under recognized or even may be misdiagnosed. This study analyses the gender differences in patients with gouty arthritis in terms of patient characteristics, risk factors for gout and clinical aspects of gout.

## MATERIAL AND METHODS

We designed a prospective study of gout arthritis in fifty subjects with 28 men and 22 women to identify any differences between men and women. All the patients with rheumatic complaints were evaluated for gout by history, thorough physical examination and laboratory investigations.

American Rheumatism Association (ARA) criteria, 1977 was used for the diagnosis of gout.<sup>4</sup> In doubtful cases clinical diagnosis was made.

The following data was collected during the study – age, sex, body mass index, risk factors for gout and gout associated comorbidities including alcohol use, obesity, hypertension, renal insufficiency, diabetes mellitus (DM), cardiovascular diseases

(CVDs) and other related disorders were noted.

Hypertension was defined by systolic blood pressure  $\geq 140$  mm Hg or diastolic blood pressure  $\geq 90$  mm Hg or use of anti hypertension medications. Diabetes was defined as fasting blood sugar levels  $\geq 126$  mg/dl or use of medications to treat diabetes. Obesity was defined as BMI  $\geq 30$  kg/m<sup>2</sup>. Hyperlipidemia was defined as triglyceride level  $\geq 150$  mg/dl or total cholesterol level  $\geq 200$  mg/dl or use of lipid lowering drugs. Hyper uricemia was defined as a serum uric acid measurement  $> 6$  mg/dl (360  $\mu$  mol/l) in women and  $> 7$  mg/dl (420  $\mu$  mol/l) in men.

## RESULTS

Women with gout were older by 5 years compared to males, mean age of women 54.45 years (range 22-75 years) versus mean age of men 49.78 years (range 22-80 years). With cut off age for menopause considered as 50 years, more than half of the women (59.9%, n=13) were postmenopausal at the initial presentation. The body mass index for males and females is shown in the table - 1: Risk factors for gout and comorbidities associated with gout are shown in table - 2.

Men had higher rate of comorbidities than women, 82.14% (n=23) vs 68.18% (n=15) but each women had a higher average comorbidities per subject than men, 2.31 vs 2.0 comorbidities per subject. Clinical presentation of gout is shown in the table – 3.

## DISCUSSION

In our study women were 5 years older vs De Souza AW et al study -7 years older.<sup>5</sup> The reason for higher age of onset of gout in women is that they develop gout after menopause. Females are protected against gout in the pre-menopausal period due to uricosuric effect of female sex hormones (Oestradiol).<sup>6</sup> Fifty nine percent (59.9%, n=13) of women were post-menopausal (>50 years) at the time of diagnosis of gout. Alcohol was exclusively used by men, 64.28% (n=18) vs 0%(n=0). Diuretic use was almost similar in both sexes, which is a risk factor for gout. Men had a higher rates of obesity (BMI  $\geq 30$  kg/m<sup>2</sup>) than their female counterparts, 39.28% of the men vs 27.27% of the women, where as females are often overweight (BMI  $\geq 25$ -29.9 kg/m<sup>2</sup>) than males, 45.45% of females vs 35.71% of males. Hyperlipidemia was also higher in males, as compared to females, 71.42% vs 31.81%.

There were no sex differences in the prevalence of diabetes

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**How to cite this article:** Channa Reddy H, Rajesh M S. Gouty arthritis - analysis of gender disparities. International Journal of Contemporary Medical Research 2016;3(3):862-863.

Category	BMI (Kg/m <sup>2</sup> )	Males		Females	
		No.	(% of males)	No.	(% of females)
Underweight	15-19.9	1	(3.5)	0	(0)
Normal	20-24.9	6	(21.42)	7	(31.87)
Over weight	25-29.9	10	(35.71)	10	(45.45)
Obesity	>30	11	(39.28)	6	(27.7)
	Total	28	(56)	22	(44)

**Table-1:** The body mass index for males and females

Risk factors/Comorbidities	Men (n=28)		Women (n=22)	
	No.	(% of men)	No.	(% of Women)
Alcohol	18	(64.28)	0	(0)
Diuretic use	5	(14.28)	4	(18.18)
Obesity	11	(39.28)	6	(27.27)
Hyperlipedemia	20	(71.42)	7	(31.81)
Hypertension	9	(32.14)	7	(31.81)
Renal impairment	4	(14.28)	6	(27.27)
Diabetes Mellitus	3	(10.71)	3	(13.63)
CVD	5	(17.85)	4	(18.18)
Hypothyroidism	0	(0)	3	(13.63)

CVD – Cardiovascular diseases, includes coronary heart disease, myocardial infarction and heart failure.

**Table-2:** Risk factors for gout and comorbidities associated with gout

	Men		Women	
	No.	(% of men)	No.	(% of Women)
Podagra	6	(21.42)	9	(40.90)
Ankle	10	(35.71)	1	(4.54)
Knee	1	(3.57)	5	(22.72)
Polyarthritis	0	(0)	4	(18.18)
Bursitis	5	(17.85)	1	(4.54)
Tendinitis	3	(10.71)	0	(0)
Enthesopathy	1	(3.57)	1	(4.54)
Tophi	4	(14.28)	0	(0)

Bursitis: Subacromial 2, Retrocalcaneal 2, Olecrenon 1 and Trochantric bursae 1

**Table-3:** Clinical presentation of gout.

mellitus, hypertension and cardiovascular disease and diuretic use. Many studies have reported higher incidence of renal impairment in women with gout. We observed similar findings in our study with renal dysfunction being more common in women (22.72%) compared to men (14.28%) with gout. This rate of renal impairment is lesser in our study compared to other studies, our study 22.72% vs Park YB et al study-47%.<sup>7</sup> The most common joint involved in women is first metatarsophalangeal joint (Podagra), a twofold greater than in men, 40.90% women vs 21.42% men. The most common joint involved in males is ankle joint as compared to females (35.71% vs 4.54%), where as knee joint was predominantly affected in females (22.72% vs 3.57%). Polyarthritis as a presentation of gout was found only in females (18.18%), where as tophi were found only in males (14.28%). Jansen HJ et al, in a systematic review of gout in women compared to men found that women were older, had more comorbidities with hypertension and renal insufficiency, more often use of diuretics, less often podagra more often involvement of other joints.<sup>8</sup> Bursitis and tendinitis were found mainly in the males. Juan J et al reported bursitis (Prepatellar, Olecrenon) in 11.02% (15/136) in sub-

jects with gout all in males, comparable to our study.<sup>9</sup>

These difference can be attributed to genetic predisposition, age at onset, changes in diet, life style and environmental factors and differences in risk factors for gout.<sup>10,11</sup>

The women develop gout at a later age, more often over weight, had more multiple comorbidities per subject, higher incidence of renal insufficiency, podagra was more common, followed by knee joint affection, more likely to have polyarthritis. Men with gout have higher prevalence of comorbidities, more commonly obesity and hyperlipedemia, more likely to use alcohol, higher frequency of ankle joint involvement, bursitis and tendinitis.

## CONCLUSION

Our study shows that there are gender disparities in risk factors for gout, gout associated comorbidities and clinical spectrum. Better knowledge of these differences between men and women, will lead to early diagnosis of gout, optimal treatment, prevention of complications and improvement in health outcomes.

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**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 02-02-2016; **Published online:** 25-02-2016