



# Assessment of Heart Failure Risk and Characteristics in the Black Population with Gout



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## Background

- Prior studies have documented a higher prevalence of heart failure (HF) in the non-black gout population.
- Using clinical and echocardiographic data, we aimed to assess the characteristics of left ventricular dysfunction and associated risk factors of HF in Black patients with gout.

## Methods

- Cross sectional analysis of electronic medical record data of gout patients with HF was compared to age, sex and race matched cohort of non-gout patients.
- Clinical parameters and 2-D echocardiograms were reviewed for patients.
- Left ventricular ejection fraction (LVEF), left ventricular wall motion and size abnormalities, diastolic dysfunction were evaluated.
- HF patients with gout were further categorized based on LVEF percentage into three groups: < 40%, 41-55%, >55%.
- Descriptive statistics using SPSS version 29 was applied.
- Logistic regression model was used to assess the strength of association between HF and cardiovascular risk factors.

Characteristics	Gout(N= 471)	Non gout(N= 471)	p value
Age ( in years ) ( mean $\pm$ SEM )	67.3 $\pm$ 0.52	67.3 $\pm$ 0.52	NS
BMI ( kg/m2)	31.3 $\pm$ 0.35	28.2 $\pm$ 0.26	0.01
Black population	365 (89%)	428 (94.3%)	NS
Men	295 (63%)	296 (63.6%)	NS
Hypertension	416 (89%)	350 (75.9%)	<0.01
Hyperlipidemia	238 (52.3%)	219 (48.7%)	NS
Diabetes Mellitus	211 (46.3%)	204 (44.3%)	NS
Congestive Heart failure	213 (45%)	44 (9.4%)	<0.01
Systolic dysfunction	94 ( 46.3%)	N/A	
Diastolic dysfunction	100 ( 45.9% )	N/A	
All-cause readmissions (one or more)	106 (54.1%)	8 (19%)	<0.01

Characteristics	Heart failure groups			p value
	EF<40%	EF 41-55%	EF>55%	
No of gout patients(%)	94 (46.3%)	46 (22.7%)	63 (31%)	<0.01
Highest serum uric acid level (mg/dL) (mean $\pm$ SEM )	10.7 $\pm$ 1.15	9.9 $\pm$ 1.3	9.2 $\pm$ 0.5	NS

Logistic regression model analysis			
	Odds ratio	Confidence Interval (95%)	p value
Model 1 - Unadjusted Odds ratio for HF with gout history	7.97	5.5-11.4	<0.01
Model 2 - Odds ratio adjusted f or CVD risk factors in HF patients with gout history	7.1	4.7-10.6	<0.01

## Results

- The gout cohort consisted of 471 patients, mean age was 67.3  $\pm$ 0.53 years, 89% were Black, 63% were men and BMI was 31.3  $\pm$  0.35 kg/m2 were compared to an age, sex, race matched cohort without gout.
- There were higher rates of hypertension, hyperlipidemia, diabetes mellitus, chronic kidney disease in the gout population compared to non-gout.
- Gout patients had a higher prevalence of heart failure with 45.2% (n=213) compared to controls with 9.4% (n=44 ).
- Systolic dysfunction was more prevalent among the gout patients. 46.3% had EF <40%, 22.7% had EF of 41-55% and 31% in EF>55%.
- Additionally in the gout cohort, diastolic dysfunction(DD) was found in 45.9%. Grade 1 DD was observed in 70%.
- Left ventricular hypertrophy(LVH) was found in 22.6% in gout vs. 24.2% in non gout group (p = NS).

-The mean highest serum uric acid levels among the 3 gout subgroups were 10 $\pm$ 0.60 mg/dL without an intergroup significance(p = NS ).

- In the logistic regression model, the unadjusted odds ratio(OR) of HF in patients with gout was 7.97 ( 5.5 – 11.4, 95% CI ), p < 0.01.
- After adjusting for traditional risk factors including age, BMI, HTN, DM, HLD, the OR of HF in patients with gout was 7.1 1 (4.7-10.6, 95% CI), p< 0.01.
- There were at least one or more all-cause readmissions in 54.1% of gout patients as opposed to only 19% in the non-gout group, p<0.01.

## Conclusion

- Black population with gout had a very high prevalence of cardiovascular risk factors and congestive heart failure
- In addition, all cause hospital readmissions were significantly higher in the gout population
- Systolic dysfunction (46.3%) was found to be more prevalent than previously studied in the Caucasian population (12.7%)(1).
- Further larger studies are needed to confirm our findings and develop management strategies in Black gout patients with HF..