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Research Article

Epidemiology, Comorbidities and Clinical Features of Gout in Southern Part of India.

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Abstract: Gout is a common painful inflammatory arthritis. Both the incidence and prevalence of gout have increased worldwide in recent years and the clinical pattern of gout is becoming more complex. Gout is typically diagnosied using clinical criteria from American college of Rheumatalogy. Acute gout is treated with NSAIDS and recurrent gout with urate lowering therapy. The objective of the study was to determine the epidemiology and clinical presentation of gout. This is a prospective study of 50 patients with gout who presented to Orthopaedics department. Baseline demographics and characterstics, body mass index, comorbidities associated with gout, clinical features and laboratory data were collected and analysed. There were 28 men and 22 (44%) women with a mean age of 52.11 years and mean body mass index 28.08 kg/m^2. Precipitating factors were present in 66%. Comorbidities were present in 80% of patients with gout. First metatarso-phalyngeal joint was involved in 34%. Comorbidities were present in 80% of patients. Hyperlipedemia was present in 40%, obesity34%, hypertension 30%, coronary artery disease in 18%, renal disease18% and diabetes mellitus in 12%. Mean serum uric acid was 8.95 mg/dl. In our study women were more in numbers but mean age and mean BMI comparable to other studies. Obesity, hyperlipedemia and hypertension were common comorbidities associated with gout and predisposing factors for gout. It is worthwhile screening patients who present with gout for cardiovascular risk factors and comorbidities to improve the patient outcomes.
Keywords: Gout arthritis, Hyperurecemia, Alocholisum, Inflammation

INTRODUCTION

Gout is a disorder of purine metabolism and results from deposition of urate crystals in and around the joints caused by long standing hyperuricemia. Gout the king of diseases and the diseases of kings was regarded as a very rare disease earlier, but the incidence and prevalence of gout has increased in the last few decades because of shifts in diet and life style changes [1]. The important risk factors for gout are hyperuriciemia, obesity, hypertension, diuretic use, dietary risk factors such as meat, sea food and alcohol (Beer and spiritis) [2,3]. Hyperurecemia and Gout is a risk factor for coronary heart disease and was found to be associated with cardiovascular diseases and cardiovascular risk factors. Clinical presentation of Gout may vary from classical podagra to unusual sites and features like spinal involvement causing root or cord compression and carpal tunnel syndrome are being reported [4,5].Treatment of acute gout attack includes NSAIDS, colchicine and corticosteroids. This study reviews the results of epidemiology and clinical spectrum of 50 patients with gout presented to Orthopedics department.

MATERIALS AND METHODS

This is a prospective study of 50 Gout patients (28 men 22 women) presented between 2012 and 2014.Each patient is evaluated clinically by taking history, thorough clinical examination for rheumatic diseases. Patients with complaints of arthralgias, arthritis of any joint, bursitis, tendinitis, enthesitis (enthesopathy), neck pain, back pain, generalized body ache and related complaints were evaluated for gout. The diagnosis of gout was made based on the American Rheumatism Association (ARA) Criteria 1977 and European league against rheumatism (EULAR) 2006 evidence based recommendations for the diagnosis of the Gout [6]. In doubtful cases clinical diagnosis was made taking into account history, physical examination, imaging and laboratory findings including serum uric acid (SUA) measurements at the time of acute attacks and at 2 weeks follow-up would be critical to the diagnosis. The demographic features including age,

gender, Body mass index (BMI) and clinical manifestations and laboratory investigations were noted. Any precipitating factors for gout including alcohol intake were also noted. Risk factors for gout and comorbidities associated with gout including obesity, hyperlipedmia, diabetes Mellitus (DM), hypertension, cardiovascular diseases (CVD's) were noted.

Hyperuricemia was defined as a serum uric acid measurement more than 60 mg/dl (360 µ mol/l) in women and > 7 mg/dl (420 µ mol/l) in men. Hypertension was defined by systolic blood pressure $\geq$ 140 mm Hg or diastolic blood pressure $\geq$ 90 mm Hg or use of anti-hypertensive medications. Diabetes was defined as fasting blood sugar levels $\geq$ 126 mg/dl or use of medications to treat diabetes mellitus.Obesity was defined as BMI $\geq$ 30 kg/m^2. Hyperlipedemia was defined as triglyceride level $\geq$ 150 mg/dl or total cholesterol level $\geq$ 200 mg/dl [7,8].

RESULT

Mean age of patients was 52.11 years (range 22-80 years). Females were older than males by 5 years. The mean age of females 54.45 years (range 22-75 years) compared with males 49.78 years(range 22-80 years). The male: female ratio was 1.27:1 (28/22).

Table-1: Shows The Age And Sex Distribution

Age	Male		Female		Total (male and female)	
	No.	(%)	No.	(%)	No.	(%)
<30	2	7.14	2	9.09	4	8
30-39	1	3.57	2	9.09	3	6
40-49	9	32.14	5	22.72	14	28
50-59	9	32.14	1	4.54	10	20
60-69	6	21.42	9	40.90	15	30
$\geq$70	1	3.57	3	13.63	4	8
Total No.	28	56	22	44	50	100

The acute attacks of gout were precipitated by alcohol intake in 10% (n=5) patients, diet (meat and sea food) in 10% (n=5), diet or alcohol in 24% (n=12), diuretics in 16% (n=8). Anti tubercular drugs – Pyrizinamide and ethambutol (2%), trauma (2%) and intercurrent illness (2%) in one case each and no precipitating factors were found in 34% (n=17) patients. History of smoking was present in 10 patients (20%).The mean BMI for men was 28.00 kg/m^2 (range 21.60-33.20 kg/m^2) and for women 28.17 kg/m^2 (range 19.92-40.81 kg/m^2). The mean BMI for the whole group was 28.08 kg/m^2 (range 19.92-40.81). Twenty six percent (26%) patients had normal BMI (BMI 20-24.9 kg/m2), 38% (11 males, 8 females) had over weight (BMI 25-29.9 kg/m2) and 34% (men 11, women 6) were obese (BMI >30 kg/m2). Eighty percent(80%) of patients (men-25,women-15) had at least one comorbidity. Hyperlipedemia (40%) and obesity (34%) were most common followed by hypertension (30%), cardiovascular diseases(18%), renaldisease(18%), diabetesmellitus (12%), hypothyroidism (4%), psoariasis (2%). Clinical presentation is shown in table2.

Most commonly involved joint is first metatarso phalyngeal joint, (Classically known as podagra) in 34% patients, followed by ankle 18% and knee 12%. More than one joint or site is involved in 11 (22%) patients. All the patients had evidence of acute inflammation at the affected site. Tophi were found in 4 (8%) patients – one each in hand, elbow, foot, and elbow and foot. The mean serum uric acid was 8.95 mg/dl (6.8-12.3 mg/dl) in men and 7.70 mg/dl (6.4-10.3 mg/dl) in women and 8.32 mg/dl (6.4-12.3 mg/dl) for the whole group. ESR was elevated (>20) in 76% of patients. RA factor was positive in 3 cases, all with poly arthritis.

Leucocytosis >11000 was seen in 15 (30%) patients. Hyperlipedemia was present in 40% patients.

Table-2: Shows Clinical Manifestations

Joints involved	No.	%
First Metatarso-phalyngeal joint (Podagra)	17	34
Ankle	9	18
Knee	6	12
Wrist and Shoulder	2	4
Hand(fingers)	1	2
Polyarthritis	4	8
Bursitis	6	12
Sub-acromial	2	
Retro Calcaneal	2	
Olecrenon	1	
Trochantric	1	
Tendinitis	3	6
Dequervain's Disease	1	
Rotator Cuff tendinitis	1	
Adductor Magnus	1	
Enthesopathy	2	4
Tennis elbow	2	
Plantar fasciitis	1	

DISCUSSION

Gout is a crystal deposition rheumatic disease. Acute gout most often beings with mono or oligoarthritis in lower limbs (85-90% cases). Most commonly affects first metatarso-phalyngeal joint – called podagra (50% of initial attacks) followed by foot, ankle, knee, wrist, fingers and elbow. The initial attack is rarely polyarticular (3-14% cases). Onset is abrupt with intense pain and affected site is erythematous, swollen, warm and tender resolve spontaneously within several days to two weeks. Acute flares also occur in periarticular structures including bursae and tendons [9,10]. Chronic gout is characterized by tophi, are nodular masses of monosodium urate crystals deposited in the soft tissues of the body including joints, bursae and tendons and chronic joint damage.The prevalence of gout rises with age through its association with age related disorders such as obesity, hypertension, renal disease which are risk factors for gout [11].Gout is most common between 40-60 years.In our study 58% patients were above the age of 50 years.Gout predominantly affects men, however the incidence of gout in the elderly has a more equal sex distribution. Women develop gout mainly after menopause due to fall in oestrogen hormones which have uricosuric effect [12]. Most studies show more than 75-80% (M:F = 3-4:1) of gout cases were men. In our study females accounted for 44%. The increase in the number of women in our study is because of more than 60% of females were >50 years old (post-menopausal) and 68.18% of females had comorbidities [13]. Our study compares with the study of Becker MA et al (44% V 46%). Only four patients were young females less than 40 years. The predisposing factors in these patients were hypothyroidism in two patients, drugs (pyrizinamide and ethambutol) in one and no apparent cause was found in one patient [14].

There is an established association between overweight, obesity and increased risk of gout, whereas weight loss decreased the risk of gout. Obesity causes insulin resistance and this in turn may lead to hyperurecemia and gout by inhibiting the renal clearance of uric acid[22] and increasing the production of uric acid [15]. Various studies reported a mean BMI ranging from 25.97 – 32.8 kg/m^2 in gout patients. Mean BMI in our study was 28.08 kg/m^2 (range 19.92-40.81 kg/m^2). Seventy two (72%) of patients had BMI >25 (BMI > 25-38%, >30-34%) which is comparable with other studies [16,17].The association between gout and co-morbidities are well known. Higher prevalence of hyperurecemia and gout was reported to be highly associated with alcohol intake, over weight or obesity, hypertension, Chronic kidney disease (CKD) and increased triglycerides (hyperlipidemia), metabolic syndrome which are risk factors for development of gout [18]. Gout is also associated with and is a known risk factor for hypertension, type 2 DM, CVDs (MI, CHF) and renal disease (urolithiasis, CKD). Gout is also associated with hypothyroidism and psoariasis. Thus gout patients not only suffer potentially disabling and deforming arthritic disease, but are also at high risk for cardiovascular diseases and metabolic disorders and

collectively leading to an increased risk for all-cause and cardiovascular mortality in patients with gout [19].

A study by Annemans L etal reported that 93% of patients had at least one associated disease or comorbidity [20]. In our study 80% [men-25(50%),women-15(30%)] of patients had at least one associated co-morbidity. First attacks of gout may precede the diagnosis of metabolic abnormalities and associated diseases. Co-morbidities associated with gout either predispose (cause) to gout or gout causes these diseases (effect) [21]. Alcohol consumption particularly purine-rich beer and spirits was associated with increased risk for hyperurecemia. Higher the daily alcohol intake, higher the risk of gout [22,23]. Hyperuricaemia is considered the most important risk factor for development of gout. The risk of developing gout increased with increasing SUA level in both men and women. In a prospective study the incidence of gout was SUA 7.0 to 7.9 mg/dl, 10.8% ; SUA 8.0 to 8.9 mg/dl, 27.7% ; SUA $\geq$ 9.0mg/dl, 61.1%. The mean serum uric acid level in our study 8.32 mg/dl (range 6.4-12.3 mg/dl) compares with other studies [24,25].

CONCLUSION

Hyperuricemia and gout is commonly associated with co-morbidities including obesity and metabolic abnormalities and is an important risk factor for cardiovascular diseases. It is worthwhile screening patients who present with gout for cardiovascular risk factors and comorbidities as a part of initial assessment of patients with gout. Early diagnosis and treatment of gout might improve cardiovascular outcomes.

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