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Epidemiology of gout

ABSTRACT

The incidence and prevalence of gout are rising, likely as a result of a changing pattern of risk factors. At-risk populations are growing, due to the fact that people are living longer. Longevity and current dietary and lifestyle choices have also contributed to increased rates of comorbidities associated with hyperuricemia and gout. The use of medications to treat such comorbidities also plays a role in some cases of gout. While dietary and lifestyle modification may be useful as adjunctive measures, such changes do not replace pharmacologic treatments for gout or associated comorbidities.

KEY POINTS

Although gout is more common in men, the diagnosis of gout should still be considered in women, particularly postmenopausal women.

Use of diuretics is a significant risk factor for gout.

Patients with hypertension, diabetes, hyperlipidemia, chronic kidney disease, or the metabolic syndrome are at increased risk for developing gout. Vigilance for gout is especially indicated in patients with metabolic syndrome.

Both the incidence and the prevalence of gout appear to be increasing worldwide.[1,2] Risk factors for the development of gout are related to our increasing longevity, dietary and lifestyle changes, and an increased prevalence of comorbid conditions. Patients with conditions such as hypertension, diabetes, cardiovascular disease, and the metabolic syndrome have an increased risk of developing hyperuricemia and gout,[1,2] and such conditions are frequently managed by primary care physicians. This paper discusses how these conditions, along with diet, alcohol intake, and lifestyle, contribute to the increasing prevalence of hyperuricemia and gout.[1]

PREVALENCE AND INCIDENCE: BOTH ARE RISING

The Third National Health and Nutrition Examination Survey (NHANES III) estimated the prevalence of gout in the US population to be 5.1 million between 1988 and 1994.[3] Data from a US managed care claims database revealed an increase in gout prevalence from 2.9 cases per 1,000 persons in 1990 to 5.2 cases per 1,000 persons in 1999.[4] Other studies indicate that gout is becoming more prevalent in societies such as New Zealand and Taiwan as well as in the United States.[5,6]

The NHANES III data show that gout affected more than 3 million men aged 40 years or older, and 1.7 million women aged 40 years or older, in the period from 1988 to 1994.[3] The estimated prevalence of gout among men aged 40 years or older makes this disease more common than rheumatoid arthritis and the most common form of inflammatory arthritis in adult men.[7–9]

The incidence of gout is also increasing. The Rochester Epidemiology Project estimated the incidence of gout in Rochester, Minn., for two 2-year periods: 1977–1978 and 1995–1996.[2] They found the age- and sex-adjusted annual incidence of gout to be higher in 1995–1996 (62.3 cases per 100,000 persons) than in 1977–1978 (45.0 cases per 100,000 persons). The annual incidence of primary gout (ie, in persons without exposure to diuretics) was more than twice as high in the more recent period than in the period 2 decades earlier, and this difference was significant both before ($P < .001$) and after ($P = .002$) adjustment for age and sex of the cohorts. As detailed in **Figure 1**, this investigation found that the incidence of gout was greater in men than in women and increased with advancing age in both sexes.[2]

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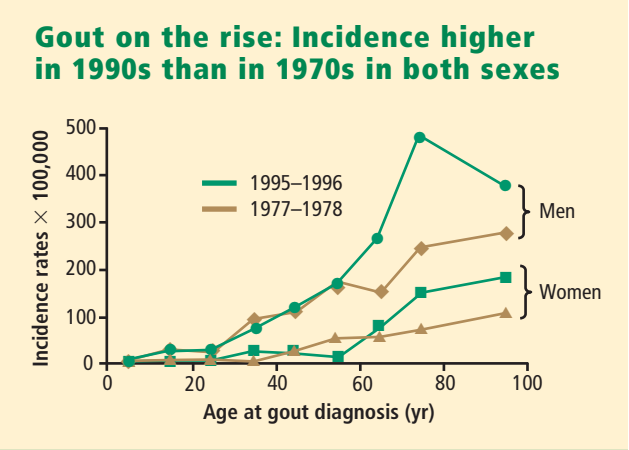

FIGURE 1. The incidence of gout in Rochester, Minn., in recent and remote 2-year periods according to age at diagnosis.

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RISK FACTORS FOR GOUT DEVELOPMENT

Sex and age

Figure 2 presents the prevalence patterns for gout by age and sex in a large general practice–based population database from the United Kingdom in a recent year (1999).[6]

Men have higher serum urate levels than women do, which increases their risk of developing gout. Development of gout before age 30 years is overwhelmingly more likely in men than in women.[7,9,10] The prevalence of gout in men increases with advancing age and peaks between ages 75 and 84 years.[6] Women have an increased risk of developing gout after menopause; the risk begins to rise at about age 45 years with the decrease in estrogen levels.[10,11] The incidence of gout becomes approximately equal between the sexes after age 60 years.[10,12]

It is important for clinicians to bear these factors in mind when taking the patient history and considering gout in the differential diagnosis. Although gout is more common in men, the diagnosis of gout should still be considered in women, particularly postmenopausal women.[10,11]

Medications

The use of diuretics is a significant risk factor for the development of gout. Diuretic use results in increased reabsorption of uric acid in the kidney, leading to hyperuricemia.[1,7,10,13] If reasonable, an alternative antihypertensive agent should be prescribed. Low-dose aspirin, commonly prescribed for cardioprotection, also increases urate levels slightly in elderly patients,[14] but should not be discontinued if indicated. Cyclosporine, which increases tubular reabsorption of urate,[1] can result in a type of rapidly ascending gout that frequently is polyarticular.[1,15] This is often encountered in transplant patients taking cyclosporine as an immunosuppressant. Hyperuricemia is also seen in patients taking pyrazinamide, ethambutol, and niacin. Physicians should be aware of the risks and benefits of prescribing any of these drugs to a patient with gout and consider that they may precipitate a gout flare in a previously unaffected patient.

Comorbidities

Primary care physicians regularly see patients with hypertension, diabetes, hyperlipidemia, chronic kidney disease, cardiovascular disease, and the metabolic syndrome. As patients with these comorbidities are at an increased risk for developing gout,[1,10,11] it may be beneficial in these patients to inquire whether they have had any bouts of arthritic pain and periodically evaluate the serum urate level (which is no longer included on chemistry profiles).

Choi et al reviewed the NHANES III data to evaluate the relationship between gout and the metabolic syndrome.[11] The prevalence of the metabolic syndrome in study participants with gout was greater than 60%, whereas the prevalence in participants without gout was only about 25%. Metabolic syndrome prevalence increased with age, such that it was present in more than 70% of participants with gout aged 40 years or older **(Figure 3)**. Vigilance in regard to this particular association is essential for optimal patient care.

Obesity/high body mass index

Obesity and high body mass index significantly contribute to the risk of developing gout.[13,16] Choi and colleagues observed that the risk of gout is very low for men with a body mass index between 21 and 22 but is increased threefold for men whose body mass index is 35 or greater.[13] Obesity is associated with increased serum urate levels attributable to increased urate production and decreased renal urate excretion. A weight loss program may reduce the risk of gout by decreasing urate levels over time.[13,16]

Diet and alcohol consumption

A study by Choi and colleagues found that high intake of alcohol (beer more so than hard liquor or wine) and a diet rich in meat (particularly red meat, wild game, or organ meat) and seafood (particularly shellfish and some larger saltwater fish) increase the risk for developing gout.[17,18] Purine-rich vegetables, which were previously eliminated in low-purine diets, were found not to have any association with hyperuricemia and did not increase the risk of gout.[17,18] Frequent consumption of dairy products was found to slightly reduce the risk of gout and hyperuricemia.[17,18]

Although manipulation of diet and alcohol consumption alone rarely achieves the desired degree of serum urate reduction, adherence to changes in diet and

Gout prevalence: Higher in men, and fueled by advancing age up to the mid-80s

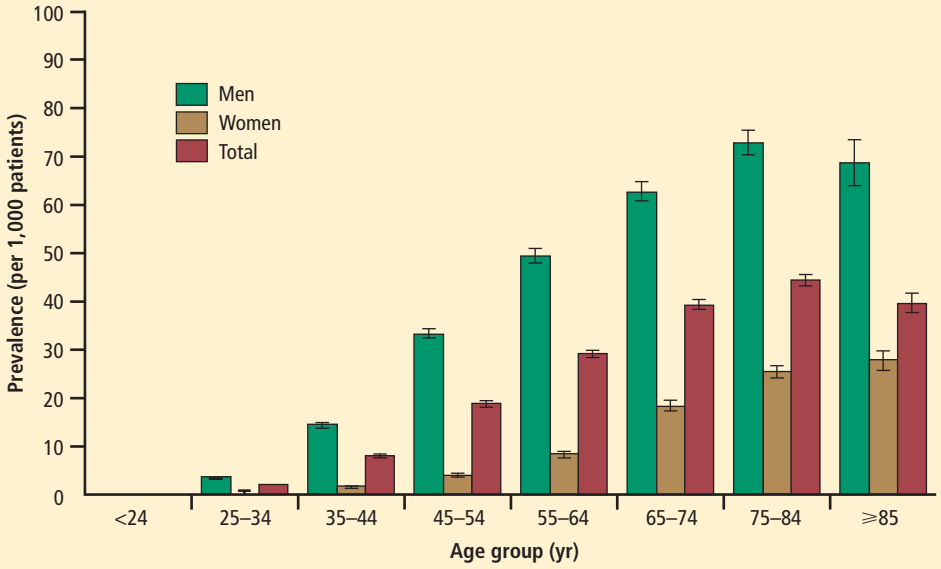

FIGURE 2. The prevalence of gout, stratified by age and sex, per 1,000 patients in the United Kingdom enrolled in the UK General Practice Research Database, a physician-validated electronic medical record.

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Gout associated with higher prevalence of metabolic syndrome across age groups

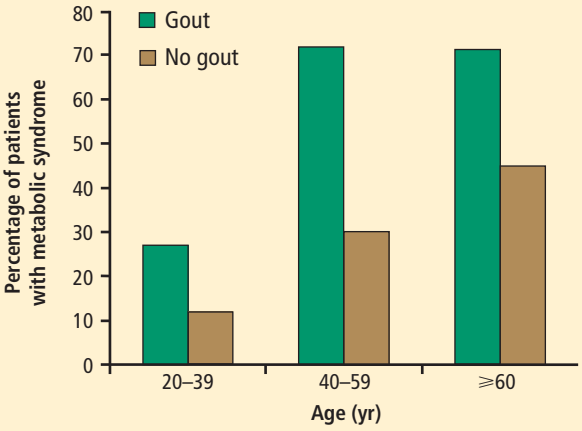

FIGURE 3. Prevalence of the metabolic syndrome, by age, in adults with and without gout in the Third National Health and Nutrition Examination Survey (NHANES III). Based on data reported by Choi et al.[11]

alcohol intake will reduce flares of gout and assist in lowering serum urate levels.

CONCLUSIONS

Diet, alcohol consumption, and lifestyle choices can increase the risk of developing gout, but making recommended lifestyle changes does not replace pharmacologic treatments for existing gout or associated comorbidities. Furthermore, very few patients are likely to follow through with lifestyle changes such as weight reduction and a low-cholesterol diet.[19–21] Therefore, physician awareness of the factors that contribute to the development of gout is important, as is identification of at-risk patients before they develop manifestations of the disease. Increased vigilance in monitoring serum urate levels and monitoring for gout development in at-risk patients may help to improve the standard of care for gout.

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