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The Impact of Deficits in Gout Care on Hospitalizations

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Key Terms

gout; quality of care; hospitalizations; uric acid lowering medications

INTRODUCTION

Gout is a common cause of inflammatory arthritis that affects 1–2% of adults in developed countries.[1] Several studies have demonstrated deficits in gout care by providers and patients (e.g., medication nonadherence), mostly in the ambulatory setting.[2–4] Given the clinical and financial implications of gout in hospitalized patients, we sought to identify whether these deficits contributed to the occurrence of gouty flares leading to a hospital admission or an inpatient complication.

MATERIALS AND METHODS

The study was performed at a tertiary care medical center and an affiliated community hospital in Central Massachusetts and was approved by the local Institutional Review Board. We performed a retrospective chart review of all hospitalized patients between 1/1/08 and 3/31/09 in whom a rheumatology consultation was requested and a gout diagnosis confirmed.

A medical record abstraction tool was developed and pilot tested. The tool collected information relevant to confirming a diagnosis of gout and included all elements from the American College of Rheumatology (ACR) criteria for the diagnosis of gout.[5] The abstractions focused on pre-hospitalization management as well as the inpatient course. We systematically abstracted available information including presenting symptoms, prior evaluation and treatment of gout (including prior rheumatologic consultation), pertinent past medical history and physical examination findings. Results of all x-rays, laboratory studies and synovial fluid analyses during hospitalization were reviewed. We categorized patients into three groups: 1) previous history of gout confirmed by reported visualization of monosodium urate crystals (termed “crystal proven gout”); 2) previous history of gout without visualization of MSU crystals (termed “non-crystal proven gout”); and 3) no previous history of gout. We identified quality of care (based on the published gout quality of care indicators in the US, evidence-based EULAR treatment recommendations and the

British Society for Rheumatology and British Health Professionals gout management guidelines) prior to hospitalization and evaluated whether a deficit in care occurred. [6–8] Two authors (PN and LRH) independently assessed quality of care and disagreements were resolved by consensus.

We focused on pre-hospitalization gout management and the published recommendation that states if a patient has hyperuricemia and gouty arthritis characterized by 1) tophaceous deposits, 2) gouty erosive changes on radiographs, or 3) gout attack frequency of ≥ 2 attacks per year, then the patient should be treated with a urate-lowering drug (ULD).[8] In patients who were candidates for ULDs based on having at least one of the indications above and without a contraindication, we examined whether these medications were being used. During hospitalization we examined compliance with the recommendation that allopurinol should not be initiated in the setting of an acute gouty flare as well as the recommendation that during a flare, patients receiving ULDs should continue their medications without altering the dose.[7, 9] The chi-square test was used to assess whether previous rheumatologic evaluation was associated with outpatient care consistent with the recommendations.

RESULTS

There were 120 (17%) patients identified as having their first inpatient consultation for gout (confirmed by the consulting rheumatologist). Patient characteristics are summarized in Table 1. Tophi were found in 34 patients (28%) on examination by the rheumatologists, 7 patients of whom had no previous diagnosis of gout. In the 87 patients with a prior diagnosis of gout, 32 (37%) were crystal proven, while in 55 (63%) the diagnosis was made clinically. The majority of patients (n=83; 69%) had gout complicate their hospital stay (Table 2). However, 28 (23%) were admitted solely due to gout due to an inability to function at home, the need for better pain control or out of concern by the admitting physicians for an infectious etiology as the cause of the clinical presentation. In 9 (8%), gout was one of the acute conditions that contributed to the hospital admission.

Several potential triggers of gouty flares were identified (Table 3). Deficits in pre-hospital gout care occurred in 35 patients (29%), specifically lack of ULDs when indicated based on presence of tophaceous deposits, gouty erosive changes on radiographs, or frequent gout attacks. In 5 patients deficits during hospitalization were noted, including initiating a ULD in the setting of a gout flare (n=3) and discontinuing allopurinol without a clear indication (n=2). There were 32 patients who had seen a rheumatologist for gout management at least once prior to the index hospitalization, none of whom had a preventable deficit in pre-hospital care. This suggests that previous rheumatology evaluation for gout was associated with outpatient care consistent with the quality care indications and published recommendations ($p=0.02$). [8]

Discussion

Our study provides new information on gout quality of care and its relationship to inpatient admissions and hospitalizations. In 29% of patients there was a deficit in pre-hospital gout

care and in 4% deficits of care during hospitalization occurred. Tophi were present in 21% of patients with no previous history of gout suggesting providers either were unaware or did not recognize them.

The results are consistent with other studies showing lack of physician adherence to gout quality indicators and published recommendations. [3,4,10] While only 8 patients had potentially preventable gout flares that resulted in a hospital admission (suggesting the hospitalization might have been avoided), the clinical and financial implications associated with this outcome are substantial. If we extrapolate the 29% of admissions (8 patients with preventable flares that resulted in hospitalization for gout out of the 28 total admissions solely due to gout) that were potentially preventable to the 18,126 patients discharged nationally with a primary diagnosis of gout (mean hospitalization cost of \$6,093), this translates into 32 million dollars. [11] While this “back of the envelope” calculation is based on small numbers of patients and thus lacks precision, it is important as gout is perceived by many primary care providers as an easily managed outpatient condition with minimal consequences. However, the aggregate costs of deficits in care are substantial.[12] In addition, having gout complicate a hospitalization likely increases the length of stay which has tremendous implications from a nationwide perspective as the median cost per hospital day is \$1,762. [11] Evaluation by a rheumatologist prior to hospitalization was associated with care consistent with the guidelines. Given the clinical and financial implications of unnecessary medical care, this suggests that primary care providers should have a lower threshold for referring patients to rheumatologists or receive more training in the diagnosis and management of gout. In addition, manuscripts on evidence-based gout treatment recommendations should be published in primary care journals in order to facilitate their implementation by primary care providers.

The gout quality indicators used as the “gold standard” in this study were based on published recommendations and quality of care indicators in Europe and the United States. [6,7,8] However this may not reflect current practice. Some clinicians opt to prescribe urate-lowering therapy at the time of flare in concert with anti-inflammatory medications in order to ensure patients initiate chronic medications (rather than relying on patients to return after the flare has subsided). The concern with initiating urate-lowering therapy in the setting of an acute gout flare is that it can potentially worsen the symptoms. However, use of concomitant anti-inflammatory medications is thought to mitigate this.[13] Of note, our work only focused on whether patients received treatment or not with a urate-lowering therapy—the absolute minimum deemed consistent with the guidelines. As others have shown, long-term use of urate-lowering therapy titrated to appropriate serum uric acid levels and symptomatic relief is critical for optimal gout control.[10]

The data presented here should be interpreted within the context of some limitations. This was a retrospective study at 2 hospitals and limited based on the available documentation. Therefore, we do not know if patients who were not crystal proven actually had arthrocenteses performed with inconclusive results or if the procedures were never performed. We also do not know if patients were offered or prescribed ULDs previously and either declined them or stopped taking them. Lastly, we only identified visits associated with an inpatient rheumatologic evaluation thus are missing patients where a rheumatologist was

not consulted. Based on treatment patterns at our institution, we anticipate that we only missed a small number of gout patients over the study period.

In conclusion, this study demonstrates that deficits in gout quality of care occur commonly with 29% of patients having preventable deficits in pre-hospital care and 4% having deficits during hospitalization. This suggests that addressing gout quality of care has the potential to improve care and reduce unnecessary health care utilization.

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Table 1

Baseline characteristics of the gout patients.

Demographics	N=120
Age (mean years and SD)	69
Gender (% male)	78%
Race (N and %)	
Caucasian	99 (82%)
African American	8 (7%)
Asian	7 (6%)
Hispanic	6 (5%)
Gout history	
Crystal proven (N and %)	32 (27%)
Non-crystal proven gout (N and %)	55 (46%)
No previous history of gout (N and %)	33 (27%)
Tophi (N and %)	34 (28%)
Prior rheumatology consult (N and %)	32 (27%)
Prior uric acid level	73 (61%)
Past acute gout medication use prior to hospitalization	
Colchicine (N and %)	27 (23%)
NSAIDs (N and %)	10 (9%)
Steroid use (N and %)	9 (8%)
Associated Comorbidities	
Hypertension (N and %)	85 (71%)
Renal insufficiency (N and %)	65 (54%)
Dyslipidemia (N and %)	48 (40%)
Coronary heart disease (N and %)	46 (38%)
Diabetes mellitus (N and %)	42 (35%)
Congestive heart failure	41 (34%)
Excessive alcohol (N and %)	26 (22%)
Smoker (N and %)	13 (11%)
Kidney stone (N and %)	9 (8%)
Associated Medications at admission known to trigger gout	
All diuretics (N and %)	67 (56%)
Thiazide diuretics (N and %)	15 (13%)
Low dose aspirin (N and %)	48 (40%)

Table 2

Potential predisposing factors (preventable and nonpreventable) related to gout flares stratified by gout diagnosis prior to admission.

	Crystal proven gout N=32	Non-crystal proven gout N=55	No previous history of gout N=33	Total N=120
Lack of ULD use	7 (22%)	21 (38%)	7 (21%)	35 (29%)
Worsening renal function	5 (16%)	11 (20%)	6 (18%)	22 (18%)
Aggressive diuretic use	1 (3%)	8 (15%)	1 (3%)	10 (8%)
Fluid shifts from surgery	2 (6%)	2 (4%)	2 (6%)	6 (5%)
Nonadherence to ULD treatment	0 (0%)	2 (4%)	0 (0%)	2 (2%)

Table 3

The relationship between preventable gout flares and the need for hospitalization stratified by gout diagnosis prior to admission.

	Admission due to gout (n=28)	Gout contributed to admission (n= 9)	Hospital stay complicated by gout (n=83)
Gout diagnosis prior to admission	Number of Preventable Gout Flares		
Crystal proven gout (N)	2	1	4
Non-crystal proven gout (N)	2	2	17
No previous history of gout (N)	4	2	1
Total (N and %)	8 (29%)	5 (56%)	22 (27%)