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Gouty Arthritis
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Introduction
Gouty arthritis is a relatively common diagnosis within the United States. It is estimated that 9.2 million Americans suffer from gout (Golenbiewski & Keenan, 2019). Gouty arthritis is also believed to be on the rise (Golenbiewski & Keenan, 2020). This may correlate with the aging baby boomer generation since age is a risk factor. The rise of conditions that increase the risk for gouty arthritis is another correlation (Harding, 2016). These conditions include hypertension (HTN), type 2 diabetes mellitus, and chronic kidney disease (Harding, 2016). It is very possible that gouty arthritis will be encountered within the primary care setting. Gouty arthritis is a condition that may be treated and managed in primary care by a family nurse practitioner (FNP). FNP’s should be knowledgeable of when to refer or consult with rheumatology specialists.

Signs & Symptoms
• Common initial presentation is redness, swelling, and pain of the big toe (Golenbiewski & Keenan, 2019)
• Feet, ankle, hands, wrists, elbows may also be affected (Golenbiewski & Keenan, 2019)
• Associated symptoms: shiny skin, mild fever or chills, loss of appetite (Golenbiewski & Keenan, 2019)

Case Study
The following is a fictitious case study that represents a scenario that could be encountered in primary practice.

44-year-old male presents with severe pain (“too ins the foot” in his first description) in his right big toe, which is accompanied by inflammation and erythema. He is a known hypertensive and diabetes patient. Current medications include Diuretics for HTN and diuretics for NPH for 5 years. Other factors include consistent weight gain for the past 5 years, he is about 50 pounds overweight. Social history includes drinking a six-pack of beer daily.

The remainder of this presentation will provide the FNP with the knowledge and tools on how to address and treat such a case.

Underlying Pathophysiology
Gout is a metabolic disorder that results in painful, sometimes debilitating, arthritis (Harding, 2016). The cause of this condition is a buildup of uric acid in the blood and synovial fluid (McCance & Huether, 2018). It is associated with purine metabolism and kidney function. Purines and pyrimidines in the body become converted into uric acid (McCance & Huether, 2018). One enzyme that plays a role in the breakdown of uric acid is xanthine oxidase (Golenbiewski & Keenan, 2019). Uric acid is then filtered in the blood and excreted in the urine. Uric acid has a limited solubility and the threshold of uric acid is about 6.8 mg/dl (Ragab, Elshahi, & Barsi, 2017). Uric acid then leads to the precipitation of uric acid crystals in the joint and tophi which permanent deposits of urate crystals along the joints (Ragab et al., 2017). Chronic gout leads to an increased risk for kidney stones composed of urate and urate nephropathy (Harding, 2016). Urate nephropathy is a buildup of crystals in the kidney interstitium and tubules leading to renal failure.

Tophus of the knee

Hyperuricemia

The keys reasons for this are poor diet, widespread use of diuretics, comorbidities such as HTN and HIV (Mead, Antinones, & Smith, 2014). Studies show that less than half of patients on urate lowering therapy are compliant with medication (Mead et al., 2016). To help combat this issue, providers can increase follow-up appointments (Mead et al., 2014). Acute flares are managed with non steroidal anti-inflammatory drugs (NSAIDs), urate lowering therapy (Crystal, et al., 2013). Requiring the acute attacks to be treated at an earlier stage of development and making dietary changes. If non-compliance is not thought to be an issue and the patient is not responding to treatment, referral may need to be considered and treated accordingly. Finally, it is important for the FNP to note that guidelines for treatment may change in the future. Current ACR guidelines were published in 2012. These guidelines are currently under review and updated recommendations can be expected in 2020 (ACR, 2019).

Implications for Nursing Care
• Diagnosis can only be confirmed by identifying MSU crystals within synovial fluid (Ragab et al., 2017)
• Normal SUA levels are 3.5-7.2 mg/dl (ACR, 2019)
• Target SUA < 6 mg/dl (ACR, 2019)
• Treatment is aimed at lowering urate levels and making dietary changes. Management of acute flares are aimed at managing inflammation and restoring function (Golenbiewski & Keenan, 2019).
• Not all referred to LIT and have refractory gout

Medications for Acute Gouty Arthritis (Hanier, Matheson, & Wilkes, 2014)
• NSAIDs (first line therapy)
• Colchicine (no anaphylactic property, should not be administered after 36 hours of onset)
• Corticosteroids (preferred for NSAIDs and colchicine contraindication)
• Do not initiate urate lowering therapy (ULT) during an acute attack

Medications for Prevention of Chronic Gouty Arthritis (Hanier et al., 2014)
• Colchicine
• Pegloticase
• Xanthine oxidase inhibitors: Allopurinol, febuxostat

Dietary recommendations: reduction or avoidance of foods that can increase SUA
• Alcohol
• Meats (organ, red and/or processed)
• High fructose corn syrup

Risk factors (ACR, 2019):
• Lifestyle and other factors:
  • Diet
  • Alcohol consumption
  • Male
  • Family history
• Health conditions:
  • HTN
  • Diabetes
  • Hypothyroidism
  • Renal insufficiency
  • Hemolytic anemia
  • Kelley-Seeghiner syndrome
  • Lesch-Nyhan syndrome
• Medications:
  • Diuretics
  • Salkolate containing drugs
  • NSAID
  • Cyclosporine
  • Levodopa

Revisit the Case Study

Within the case study and the information provided, it would be reasonable for the FNP to suspect an acute gout attack. His age, sex, location/description of pain, inflammation of the big toe, history of HTN, xanthine oxidase, recurrent gout, uric acid level, and alcohol use are all factors that influence the development of gout. The acute attack should be managed with appropriate pharmacological therapy. Changing the HCTZ to another option to manage HTN should be considered. A referral to a rheumatologist is appropriate to identify MSU crystals within synovial fluid and to determine the long-term plan. Patient education regarding diet, weight, and alcohol use will be vital to help prevent future attacks and joint damage.

References