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## Case Report

# Vegetarian diet induced new onset acute gouty arthritis in a middle-aged genetically predisposed male: A rare presentation

Poonam Agrawal<sup>1\*</sup>, Mohit Agrawal<sup>2</sup>, Deepti Chopra<sup>3</sup>

<sup>1</sup>Dept. of Biochemistry, Dr Baba Saheb Ambedkar Medical College, New Delhi, India

<sup>2</sup>Agrawal Clinic, New Delhi, India

<sup>3</sup>Dept. of Pharmacology, All India Institute of Medical Science, Bilaspur, Himachal Pradesh, India



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## ABSTRACT

Gout is a metabolic disease characterised by acute or chronic arthritis which is due to deposition of Monosodium urate (MSU) crystals in joints and soft tissues. Classically described as a disease associated with hyperuricemia which may be due to metabolic defect in uric acid production or due to impaired renal excretion.

We present a case of 45 year old nondiabetic, non-alcoholic, non-smoker male presented to orthopaedic OPD with complain of pain in right hand and left leg with restriction of joint mobility for past 14 hours.

On carefully eliciting the dietary history patient revealed that he was a vegetarian and was on high purine rich diet for past 2 weeks due to family functions and various gatherings. Patient gave the history of consumption of cauliflower, mushrooms, beans along with sweetened carbonated drinks on two consecutive days before the onset of these symptoms.

Serum uric acid 4.5 mg/dl, C-reactive protein was 9 mg/dl. To best of our knowledge this is the first case being reported in literatures where purine rich vegetarian diet has induced new case of gout.

This kind of gout precipitation after consuming vegetarian diet is rarely reported in literature. This case report emphasizes upon the need of special caution to be taken by persons who are genetically predisposed to gout, while consuming purine rich diet like red meat, seafood, cauliflowers, spinach, rajma, Bengal gram, mushrooms, soft drinks sweetened with fructose.

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## 1. Introduction

Gout is a metabolic disease characterised by acute or chronic arthritis which is due to deposition of Monosodium urate (MSU) crystals in joints and soft tissues. Classically described as a disease associated with hyperuricemia which may be due to metabolic defect in uric acid production or due to impaired renal excretion, this disease has strong genetic predisposition and preferentially tends to affect elderly men and postmenopausal women.

Number of factors like diet rich in purines especially red meat, alcohol (specially beer), obesity, metabolic syndrome, male gender and advanced age has been linked with the occurrence of gout. However vegetarian diet which is rich in purine like Cauliflower, Soya beans, legumes have not been shown to increase the risk of gout.<sup>1</sup>

Here we are presenting a case of new onset acute gouty arthritis with unusual predisposing factor and clinical presentation.

\* Corresponding author.

E-mail address: [drpoonam24agrawal@yahoo.com](mailto:drpoonam24agrawal@yahoo.com) (P. Agrawal).

## 2. Case Report

A 45 year old nondiabetic, non-alcoholic, non-smoker male presented to orthopaedic OPD with complain of pain in right hand and left leg with restriction of joint mobility for past 14 hours. Pain first started in right wrist joint 14 hrs back and progressively increased in the intensity. Wrist joint movements was painful. After 8 hrs of onset of these symptoms, patient was awakened in the early morning with excruciating pain in the left knee joint and the left leg. Patient was not able to flex the left leg and was immobile.

Family history revealed that both the parents were known diabetics. Patient's father was also a chronic gout patient on dietary restrictions and medication. There was no past history of trauma of any sort to affected joints. Similarly, there was no history of fever or any recent surgery. No similar episode was reported in the past.

On carefully eliciting the dietary history patient revealed that he was a vegetarian and was on high purine rich diet for past 2 weeks due to family functions and various gatherings. Patient gave the history of consumption of cauliflower, mushrooms, beans along with sweetened carbonated drinks on two consecutive days before the onset of these symptoms.

On examination patient was conscious, alert and was in acute pain. Right wrist and left knee joints were swollen and tender. Signs of inflammation were found and movements were restricted in both these joints.

A diagnosis of acute gouty arthritis was made based on clinical signs and symptoms, family & dietary history and patient was put under medication after taking the blood samples for necessary investigations.

Blood investigation reports showed serum uric acid 4.5 mg/dl, blood urea 31 mg/dl, serum creatinine 0.9 mg/dl, sodium 140 meq/l, potassium 4.6 meq/l. Lipid profile was normal with total cholesterol 163 mg/dl, HDL 35 mg/dl, LDL 90 mg/dl, VLDL 38 mg/dl. Total bilirubin 0.9 mg/dl, Direct bilirubin 0.19 mg/dl, AST 40 IU/L, ALT 23 IU/L, total protein 7.5 g/dl, albumin 4.5 g/dl. Serum calcium was 9.6 mg/dl, phosphorous was 3.4 mg/dl, ALP 124 IU/L, HbA1c 6.1%, Fasting blood sugar 97 mg/dl, Hb 15.2 g%, MCV 86.5 Fl, MCH 28.7 pg, MCHC 33.1 g/dl, platelets  $205 \times 10^3 / \mu\text{l}$ .

C-reactive protein was 9 mg/dl and peripheral smear showed normocytic normochromic picture with adequate WBC and platelets.

He was prescribed NSAID (indomethacin) and combination of trypsin, bromelain, rutoside trihydrate having anti-inflammatory action.

Patient responded to analgesic treatment and pain was relieved considerably within 4 hrs of starting the treatment.

## 3. Discussion

Diet induced gouty arthritis is rarely reported in literature. Traditionally excess of red meat and alcohol (specially beer) is linked with the attack of gout.

According to Asim et al.<sup>2</sup> overproduction of uric acid due to excess purine rich diet or due to increased turnover of the cell is responsible for only 10% of cases of gout, majority (90%) of gout in this subset is because of renal underexcretion.

Data from large Health Professional Follow-up Study (HPFS) have shown association of red meat and seafood consumption with the onset of gouty arthritis. This study has failed to show any increased risk with the intake of purine rich vegetables.<sup>1</sup> Contrary to the finding of this study, our case report presents a patient who is a pure vegetarian and a teetotaller and his acute gouty attack was precipitated due to high intake of purine rich vegetarian diet.<sup>3</sup>

To best of our knowledge this is the first case being reported in literatures where purine rich vegetarian diet has induced new case of gout.

Single joint involvement is a more common presentation in a new case of gouty arthritis specially in middle-aged individuals, multiple joint involvement is more commonly seen in chronic cases of gout and in elderly patients.<sup>4,5</sup> Our patient is a middle age teetotaller who presented as new case of acute gouty arthritis with simultaneous involvement of multiple joints which is again an unusual reporting.

Our patient showed serum uric acid (SUA) level of 4.5 mg/dl which was well below the laboratory mean value of 5.5mg/dl. Finding of below normal uric acid during acute attack is not a surprising finding, as many studies have shown that SUA level typically decreases during an acute attack because of triggering of acute phase response and excessive urinary uric acid excretion.<sup>6</sup>

Our case report further strengthens the fact that the diagnosis of gout based on increased serum uric acid alone is a misconception. Hyperuricemia is a characteristic feature of gout but the disease might still be diagnosed with normal serum level of uric acid. Similarly, all the patients with hyperuricemia do not develop gout. Studies have shown that only approximately 5% patients of hyperuricemia tend to develop gout and hence genetic predisposition seems to be an important factor in determining the occurrence of gout in subset of hypouricemic population.<sup>7,8</sup>

## 4. Conclusion

Careful family and dietary history is important along with strong clinical suspicion to diagnose a new case of gout. SUA level may not be necessarily high at the time of acute attack, rather it may be well below the normal range either due to systemic inflammation or due to uricosuria. Gout may get precipitated with excessive consumption of purine rich vegetarian diet and multiple joints may be involved

simultaneously in a newly diagnosed case of the disease.

Persons who are genetically predisposed to gout should be cautious in consuming purine rich diet like red meat, seafood, cauliflowers, spinach, rajma, Bengal gram, mushrooms, soft drinks sweetened with fructose.

## 5. Source of Funding

None.

## 6. Conflict of Interest

None.

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## Author biography

**Poonam Agrawal**, Professor & Head

**Mohit Agrawal**, Senior Consultant (Medicine)

**Deepti Chopra**, Professor & Head

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