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GOUT / HYPERURICEMIA -THE SIGNIFICANCE OF NON-PHARMACOLOGICAL MANAGEMENT IN THE 21ST CENTURY

Medicine

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ABSTRACT

In recent decades, the prevalence of HU (hyperuricemia) and its complications have risen globally. HU is the second most common metabolic disorder. This is due to the urbanized lifestyle, high fructose consumption, drinking alcohol, and eating red meat. In addition to arthritis, HU imposes detrimental effects on almost all systems and with non-communicable diseases (NCDs) such as metabolic syndrome, diabetes mellitus, dyslipidemia, systemic hypertension, cardiovascular events, strokes, and many others. The presence of asymptomatic HU must not be overlooked, but it must be detected earlier. Lifestyle modifications not only reduce serum uric acid (SUA) but also prevent the development of HU-related diseases. HU is now a biochemical marker and emerging risk factor for various diseases. Maintaining SUA levels within normal levels with simple lifestyle modifications will improve quality of life and prevent many NCDs from developing. Managing HU, along with co-morbid conditions non-pharmacologically alone, will reduce morbidity and mortality.

KEYWORDS

Hyperuricemia, gout, non-communicable diseases, lifestyle modification, non-pharmacological management.

INTRODUCTION.

Gout and hyperuricemia epidemiology has altered substantially during the last century. In recent years, the incidence of gout and HU has nearly doubled [1]. Nutrition and dietary behavior have been identified to play a significant effect in this. Gout has been connected to overeating and drinking since ancient times. Studies have demonstrated that various foods have an impact on uric acid (UA) levels in the blood. The new gout epidemic is most likely caused by a diet heavy in fructose, alcohol, and red meat. The biggest alteration is the introduction of high fructose sweeteners into the diet, which causes obesity, metabolic syndrome, diabetes, and dyslipidemia. HU is characterized not only by the presence of arthritis, but also by the presence of various co-morbidities such as obesity, metabolic syndrome, and diabetes. Health concerns have arisen regarding this new issue. As a result, even if there are no symptoms, hyperuricemia should not be ignored. By bringing down UA, we are preventing UA-related diseases as well.

Role Of Nutrition In Gout/hyperuricemia

Gout is the most common inflammatory arthritis[2]. It is estimated that 69% of people have at least one attack of gout every year [3]. Gout treatment should aim to prevent not just disease onset, but also recurrent attacks. Nevertheless, nutritional behaviour plays a crucial role in preventing the recurrence of a gout attack and UA-associated diseases. Hyperuricemia and gout are increasing in the 21st century also, with mean SUA levels of >5.5 mg/dL in women and >6.0 mg/dL in men[4]. This can partly be explained by a remarkable increase in added sugars especially fructose [5]. The recent increase in hyperuricemia and gout, also with hypertension, diabetes, obesity, metabolic syndrome, and dyslipidemia, shows diet has a major role over genetic factors. Limit the food that leads to hyperuricemia and co-morbid conditions. Nutrition recommendations should aim- at low purine food, reduce the food that increases uric acid formation, and include food that increases uric acid excretion.

Which Food Increases Uric Acid?

Meat And Seafood

Meat: Bacon, turkey, veal, venison, beef, pork.
Organ meat: liver, brain, sweetbreads, heart, kidney.

Fish: Anchovies, sardine, herring, mussels, codfish, scallops, trout, haddock.One additional quantity of meat portion per day increases the risk of gout by 21%.

Alcohol

In 1876, Alfred Garrod wrote: “the use of fermented liquors is the most powerful of all the predisposing causes of gout” [6]. All types of alcohol/ beverage increase not only uric acid but also gout pain. Beer is the worst drink for gout, which is high in purine. Beer may increase the gout symptoms in men [7]. The exact incidence of alcohol-induced gout is not known, but 50% of the gout sufferers drink excessively [8].

High Fructose Corn Syrup/ Sugar-sweetened Beverage

Fructose is a powerful driver of ATP catabolism that increases the production of uric acid. The recent increase in the prevalence of HU is secondary to the high consumption of fructose-containing food products [9]. Limit or avoid sugar-sweetened foods such as sweetened cereals, bakery goods, soft drinks, and candies. Limit consumption of naturally sweet fruit juices in HU patients.

Which Vegetables Increase Uric Acid?

Tomato. It is a low purine vegetable, high in Vit C, and has 90%water content. But in a New Zealand sample study, the tomato was found to be the fourth most common self-reported trigger food of gout attacks [10]. We don't know the mechanism of how tomato increases uric acid. The association between tomato and uric acid may be either hepatic uric acid production or renal uric acid excretion, this action is mediated by phenolic acid. Tomato contains high glutamate, an amino acid found in high purine content food items. This stimulates the synthesis of uric acid.

Asparagus, spinach, mushroom green peas, dried lentil, peas, bean(mild). They contain high purine.

Honey. Not a high purine food. But high fructose may increase uric acid.

Obesity

In obese individuals, weight reduction will also reduce uric acid levels. But rapid weight reduction and drastic dieting are not advisable, as these may increase UA level.Obesity increase gout and hyperuricemia-related condition like CAD, CVA, metabolic syndrome, nephropathy. Diet control, weight reduction, and regular exercise reduces SUA level.

Which Food Should I Prefer?

Coffee:

Unlike tea, coffee of all levels of caffeination generally reduces uric acid in the blood. 1 to 3 cups of coffee reduces uric acid by 8%. But 4-5 cups of coffee reduce it by 40%. A Canada-based study among 46,000 male medical professionals over 12 years shows more coffee users are less likely to develop gout[11]. Dr.Hyon.k.Choi and colleagues noticed antioxidants phenol chlorogenic acid may reduce gout risk. Coffee is a good diuretic too, that also reduces uric acid. Coffee with a high concentration of caffeination is more useful than decaffeination in the reduction of gout risk. The American College of Rheumatology survey also confirmed long-term consumption of coffee reduces gout attacks. Dr. Thuina Neogi of Boston University School of Medicine compares coffee with allopurinol in the similarity of action. But there is a paradox too!

High fibre vegetables, cabbage, potato, ginger, bitter ground all reduce UA. Turmeric: Reduce the action of xanthine oxidase, the enzyme involved in uric acid metabolism.

Rice, whole wheat, oatmeal are all neutral in HU.

Fruits.

It is generally thought that fruits are useful in SUA reduction since they

contain high amounts of vit C, fibre, and potassium. The sweeter fruits contain high levels of fructose, which limits their use in HU patients.

***Berries*:** Strawberry, blueberry, raspberry, acai berry, and goji berry are all reducing uric acid. They are low in purine, high in Vit C, and not much sweety.

***Pineapple*:** Only fruit which contains bromelain a natural analgesic. It also decomposes uric acid crystals. Thus it reduces gout pain. Bromelain is more in the stem and this part is low in fructose. Pineapple is also rich in Vit C.

***Banana*:** It is purine-rich but high in Vit C, potassium, folic acid, and fiber making it gout-friendly.

***Lemon(juice)*:** Even though it is acidic lemon alkalizes the body, thus reducing uric acid. It increases the secretion of bicarbonate in digestive juice and neutralizes acid in the body. But orange which is also citrus fruit contains high fructose that may increase uric acid.

Potassium-rich fruits like avocado, squash, apricot may be useful, as they reduce uric acid. Avocado is one of the fattiest fruit, contain high in oleic acid.

***Apple*:** It is low in purine, high Vit C so do not increase UA. But packed apple juice usually added with artificial sweetener is high in fructose may increase UA.

***Papaya*:** This fruit is useful in all kinds of arthritis. The proteolytic enzyme papain helps maintain body alkalinity. It also contains Vit C, flavonoids, folic acid, K, Cu, Mg. So it reduces uric acid.

***Grapes*:** Grapes of all types are useful in treating gout, as they are high in bioflavonoids, potassium, and Vit C. However, sweeter grapes may have a high fructose content and therefore should be consumed in moderation.

As a general rule, all types of fruit can be recommended in limited quantities if the patient is not in the acute stage. It is wise to avoid processed juices and dried fruits, which contain more fructose.

Milk And Milk Products: Low-fat milk products and cheese reduce UA[8]. Milk contains orotic acid, which promotes the excretion of UA.

Chocolate: Bitter dark chocolate with 35% cocoa content may be helpful for HU as it is high in antioxidants

Egg: Egg proteins are low in purine. Rich in Vit B12, 6, and especially choline. All these reduce UA.

Water: Drink at least 3 liters of water per day to remove the uric acid from the body. Can include buttermilk or coconut water.

Drugs

Prefer drugs like Losartan, SGLT-2 inhibitors, fenofibrate, and Vit C as these reduce uric acid. Thiazide, anti-malignant agents and low-dose aspirin may increase uric acid.

Nutritional management alone can lower about 1 mg% of uric acid.

CONCLUSION

Over the past few decades, gout and hyperuricemia have increased dramatically. Nutrition and nutritional behavior play an instrumental role in gout development. It is widely known that gout and hyperuricemia frequently occur alongside other co-morbid conditions like obesity, metabolic syndrome, diabetes mellitus, dyslipidemia, systemic hypertension, and cardiovascular events. It is important not to ignore asymptomatic hyperuricemia. High fructose consumption, alcohol drinking, and consumption of red meat are all likely to blame for the epidemic of gout. Encourage low-fat dairy products, coffee, high carbohydrate, fiber, low-purine vegetables, vitamin C, and adequate water intake to reduce gout attacks. Promoting healthy nutrition and nutritional behaviour not only reduces serum uric acid and gout, but also prevents obesity, diabetes mellitus, metabolic syndrome, coronary artery disease, cerebrovascular disease, dyslipidemia, and renal disease. Nutrition therapy is an integral part, not only in the reduction of hyperuricemia but many non-communicable diseases too.

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