GOUT!

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GOUT

- EPIDEMIOLOGY
- RISK FACTORS
- CAUSE
- SYMPTOMS
- DIAGNOSIS
- PREVENTION
- TREATMENT

WHAT IS GOUT?

- DISEASE THAT IS CAUSED BY THE DEPOSITION OF URIC ACID CRYSTALS

EPIDEMIOLOGY

- MALE > FEMALE
- INITIAL ATTACKS IN MALES 4TH OR 5TH DECADE
- WOMEN IN THE 5TH OR 6TH DECADE
- PREVALENCE OF 3 TO 8 MILLION PEOPLE
- INCIDENCE IS INCREASING

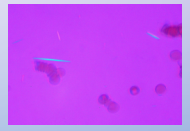
RISK FACTORS

- AGE
- GENDER
- ETHNICITY

- OBESITY
- HYPERTENSION
- HYPERLIPIDEMIA
- CHRONIC KIDNEY DISEASE
- DIETARY FACTORS
- ALCOHOL
- MEDICATIONS
- CARDIOVASCULAR DISEASE
- DIABETES MELLITUS

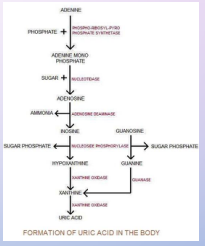
WHY DO HUMANS GET GOUT?

- URIC ACID CRYSTALS ACCUMULATE IN JOINTS, SOFT TISSUES , AND THE KIDNEY DUE TO HYPERURICEMIA



CAUSE OF GOUT

- PURINES BROKEN DOWN TO URIC ACID
- KIDNEY EXCRETES URIC ACID INTO THE URINE



FORMATION OF URIC ACID IN THE BODY

Cause of Gout

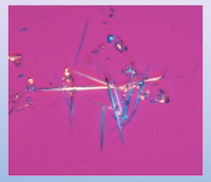
- If the kidney cannot excrete enough uric acid, blood levels rise.
- If uric acid levels exceed 6.8, it becomes insoluble and crystallizes.
- Deposits preferentially in and around joints.

Cause of Gout

- Most humans with gout (>90%) have impaired excretion of uric acid into the urine
- Other patients have increased production of uric acid

ATTACKS OF GOUT

- INTERMITTENT ACTIVATION OF THE IMMUNE SYSTEM IN AN ATTEMPT TO ERADICATE THE CRYSTALS CAUSE AN ATTACK



"Be temperate in wine, in eating, girls, & sloth; Or the Gout will seize you and plague you both."

GOUT SYMPTOMS

- PAIN
- SWELLING
- WARMTH
- ERYTHEMA
- FEVER

ACUTE GOUT

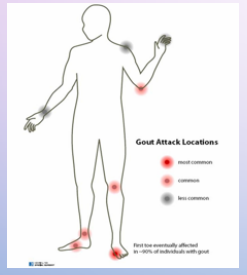
- RAPID ONSET OF PAIN, SWELLING, AND ERYTHEMA OF A JOINT IN THE LOWER EXTREMITIES
- PAIN CAN BE SEVERE WITHIN 12 TO 24 HOURS
- RESOLVES WITHIN SEVERAL DAYS TO SEVERAL WEEKS

ACUTE GOUT

- OFTEN PRECIPITATED BY SURGERY, TRAUMA, DEHYDRATION, DIETARY EXCESSES, INITIATING CERTAIN MEDICATIONS

- MULTIPLE JOINTS CAN SIMULTANEOUSLY OR SEQUENTIALLY BE INVOLVED

GOUT SYMPTOMS



"People wish their enemies dead - but I do not; I say give them the gout, give them the stone!"
Mary Wortley Montagu

GOUT SYMPTOMS

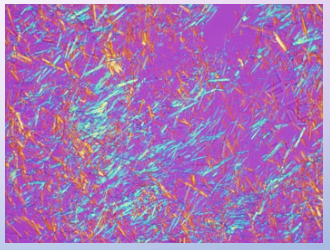
- ACUTE GOUT
- INTERCRITICAL GOUT
- CHRONIC TOPHACEOUS GOUT

TOPHI

X-RAYS

DIAGNOSIS

- HISTORY
- PHYSICAL EXAM
- LABS
- POLARIZED MICROSCOPY



PREVENTION AND TREATMENT

- DIETARY AND LIFESTYLE CHANGES
- TREAT CONCURRENT MEDICAL ILLNESSES
- ELIMINATE MEDICATIONS THAT CAN EXACERBATE GOUT
- USE MEDICATIONS THAT LOWER URIC ACID LEVELS AND TREAT GOUT ATTACKS

WHY TREAT?

- RECURRENT, DISABLING ATTACKS OF GOUT
- DESTRUCTIVE JOINT DISEASE DUE TO GOUT

DIET

- WEIGHT LOSS / DECREASED CALORIC INTAKE
- AVOID HIGH FRUCTOSE CORN SYRUP CONTAINING BEVERAGES AND FOODS
- AVOID LIVER, KIDNEY, SWEETBREADS
- LIMIT MEAT INCLUDING BEEF, LAMB, PORK
- LIMITED SEAFOOD ESPECIALLY SHELLFISH

DIET

- LIMIT FRUCTOSE CONTAINING FRUIT JUICES
- MINIMIZE SIMPLE SUGARS

DIET

- LOW FAT DAIRY IS LIKELY HELPFUL
- VEGETARIAN SOURCES OF PURINES SUCH AS ASPARAGUS, SPINACH ARE OK

DIET

- CHERRIES
- VITAMIN C
- COFFEE
- HYDRATION

ALCOHOL

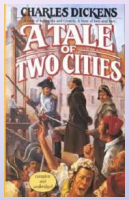
- ALCOHOL EXACERBATES GOUT
- BEER VS WINE VS SPIRITS
- LIMIT ALCOHOL INTAKE UNLESS URIC ACID LEVELS ARE CONTROLLED WITH MEDICATIONS

CONCURRENT ILLNESS

- OBESITY
- HYPERTENSION
- HYPERLIPIDEMIA
- CHRONIC KIDNEY DISEASE
- DIABETES

MEDICATIONS – EXACERBATE GOUT

- DIURETICS
- LOW DOSE ASPIRIN
- CYCLOSPORINE
- TACROLIMUS
- NIACIN
- PYRAZINAMIDE
- ETHAMBUTOL

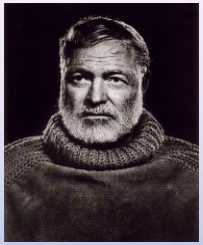


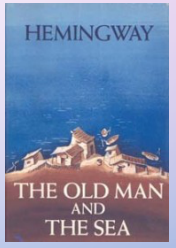
PHARMACOLOGIC TREATMENT

- ATTACKS OF GOUT
- CHRONIC TREATMENT OF HYPERURICEMIA

GOUT ATTACKS

- NSAIDS
- CORTICOSTEROIDS
- COLCHICINE





NSAIDS

- NAPROXEN 500MG 2 X / DAY
- INDOMETHACIN 50MG 3 X/ DAY
- AVOID WITH KIDNEY DISEASE, ANTICOAGULANTS
- CAUTION WITH HISTORY OF ULCERS, CARDIOVASCULAR DISEASE, POORLY CONTROLLED HYPERTENSION
- USE EARLY IN ATTACK

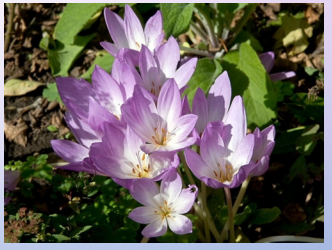
Generic Name	Tradename
Celecoxib	Celebrex®
Diclofenac	Cataflam®, Voltaren®, Arthrotec™ (combined with misoprostol)
Diflunisal	Dolobid®
Etodolac	Lodine®, Lodine®XL
Fenoprofen	Nalfon®, Nalfon®200
Flurbiprofen	Ansaid®
Ibuprofen	Motrin®, Tab-Profen®, Vicoprofen®* (combined with hydrocodone), Combunox™ (combined with oxycodone)
Indomethacin	Indocin®, Indocin®SR, Indo-Lemmon™, Indomethagan™
Ketoprofen	Oruvail®
Ketorolac	Toradol®
Mefenamic Acid	Ponstel®
Meloxicam	Mobic®
Nabumetone	Relafen®
Naproxen	Naprosyn®, Anaprox®, Anaprox®DS, EC-Naprosyn®, Naprelan®, Naprapac® (copackaged with lansoprazole)
Oxaprozin	Daypro®
Piroxicam	Feldene®
Sulindac	Clinoril®
Tolmetin	Tolectin®, Tolectin DS®, Tolectin®600

CORTICOSTEROIDS

- PREDNISONE
- METHYLPREDNISOLONE
- ORAL, INTRAARTICULAR, OR IV
- 5 TO 14 DAY COURSE
- RELATIVE CONTRAINDICATION IS POORLY CONTROLLED DIABETES

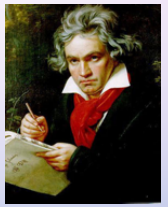
COLCHICINE

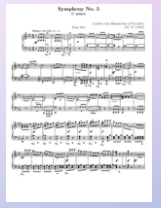
- BEST AT ONSET OF ATTACK
- LOW DOSES EFFECTIVE (.6MG 3 TABLETS FIRST DAY)
- HIGH DOSES – DIARRHEA, ABDOMINAL PAIN
- CAUTION WITH CHRONIC LIVER OR KIDNEY DISEASE



HYPERURICEMIA TREATMENT

- PREVENT FURTHER URIC ACID ACCUMULATION
- REMOVE EXISTING URIC ACID DEPOSITS
- AVOID GOUT ATTACKS
- AVOID URIC ACID KIDNEY STONES





HYPERURICEMIA TREATMENT

- INITIAL INCREASED RISK OF GOUT FLARES
- COLCHICINE OR NSAIDS AS AN ADJUNCT
- INHIBIT PRODUCTION OR IMPROVE EXCRETION OF URIC ACID

HYPERURICEMIA TREATMENT

- ALLOPURINOL
- FEBUXOSTAT / ULORIC
- PROBENICID
- LESINURAD / ZURAMPIC
- PEGLOTICASE / KRYSTEXXA
- LOSARTAN / COZAAR
- FENOFIBRATE / TRICOR

ALLOPURINOL

- 100 TO 800 MG DAILY
- DOSE IS ADJUSTED UNTIL URIC ACID LEVEL IS <6.0
- RASH, GASTROINTESTINAL INTOLERANCE
- VERY RARE, ALLOPURINOL HYPERSENSITIVITY SYNDROME

ANNALS OF
INTERNAL MEDICINE

Allopurinol in the Treatment of Gout

FEBUXOSTAT

- 40MG OR 80 MG DOSE
- SIDE EFFECTS: ELEVATED LIVER TESTS, RASH, NAUSEA, JOINT PAIN
- MAY INCREASE CV RISK
- 35X AS EXPENSIVE AS ALLOPURINOL

Febuxostat Compared with Allopurinol in Patients with Hyperuricemia and Gout

PROBENICID

- PROMOTES CLEARANCE OF URIC ACID BY THE KIDNEY
- LIMITED EFFICACY WITH DIMINISHED KIDNEY FUNCTION
- DOSES FROM 500MG TO 3000MG DAILY (2-3 DOSES / DAY)
- SIDE EFFECTS: RASH, GASTROINTESTINAL INTOLERANCE, KIDNEY STONES

LESINURAD

- APPROVED IN 2016
- USED WITH ALLOPURINOL OR FEBUXOSTAT
- INCREASES URIC ACID EXCRETION
- 200MG DOSE
- SIDE EFFECTS: HEADACHE, INCREASED CREATININE, GERD
- LIMITED USE

ZURAMPIC
lesinurad

DUZALLO
lesinurad / allopurinol

PEGLOTICASE

- URICASE (BREAKS DOWN URIC ACID)
- IV TREATMENT EVERY 2 WEEKS
- VERY EFFECTIVE
- INFUSION REACTIONS INCLUDING ANAPHYLAXIS
- VERY EXPENSIVE

SUMMARY

- GOUT IS A COMMON DISEASE WORLDWIDE CAUSED BY URIC ACID DEPOSITION.
- COMBINATION OF DIET, GENETICS, AND MEDICAL ILLNESSES CONTRIBUTE TO GOUT.
- DIETARY CHANGES, LIFESTYLE CHOICES, AND MEDICATIONS CAN CONTROL THE DISEASE.
- THE AFFLICTION OF GOUT CAN BE AVOIDED WITH TREATMENTS PRESENTLY AVAILABLE!