HYPERURICEMIA & TUMOR LYYSIS SYNDROME

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الله هو الحكيم العليم
Key Features

- Complication of rapidly proliferating malignancies as well as treatment-associated tumor lysis of hematologic malignancies
- May be worsened by thiazide diuretic use
Key Features

- Rapid increase in serum uric acid can result in acute urate nephropathy caused by uric acid crystallization
- To prevent urate nephropathy, serum uric acid must be reduced before chemotherapy
Clinical Implications—hyperuricemia

- Gout (the amount of increase is not directly related to the severity of the disease)
- Renal diseases and renal failure, prerenal azotemia
- Alcoholism (ethanol consumption)
- Down syndrome
- Lead poisoning
- Leukemia, multiple myeloma, lymphoma
- Lesch-Nyhan syndrome (hereditary gout)
- Starvation, weight-loss diets
Clinical Implications—

hyperuricemia

- Metabolic acidosis, diabetic ketoacidosis
- Toxemia of pregnancy (serial determination to follow therapy)
- Liver disease
- Hyperlipidemia, obesity
- Hypoparathyroidism, hypothyroidism
- Hemolytic anemia, sickle cell anemia
Clinical Implications—

hyperuricemia

- Following excessive cell destruction, as in chemotherapy and radiation treatment (acute elevation sometimes follows treatment)
- Psoriasis
- Glycogen storage disease (G6PD deficiency)
Decreased levels of uric acid:

- Fanconi's syndrome
- Wilson's disease
- SIADH
- Some malignancies (eg, Hodgkin's disease, multiple myeloma)
- Xanthinuria (deficiency of xanthine oxidase)
Clinical Findings

- Acute kidney injury
- Hyperuremia
- Hyperphosphatemia (associated symptoms include nausea, vomiting, seizures)
- Hyperkalemia (can cause arrhythmias and sudden death)
Diagnosis

- Laboratory values should be monitored following initiation of chemotherapy
- Elevated potassium or phosphorus levels need to be promptly managed
Treatment

- Prevention is most important
- The American Society of Clinical Oncology guidelines recommend aggressive hydration before, during, and after chemotherapy to help keep urine flowing and facilitate excretion of uric acid and phosphorus
Allopurinol

- Blocks the enzyme xanthine oxidase and therefore the formation of uric acid from purine breakdown–
- 100 mg/m2 every 8 hours orally (maximum 800 mg/day) with dose adjustments for kidney disease should be given before starting chemotherapy
Rasburicase

- Indicated for patients at high risk for developing tumor lysis syndrome or in whom hyperuricemia develops despite treatment with allopurinol.
Rasburicase

- Dosage: 0.1–0.2 mg/kg/day intravenously for 1–7 days– Cannot be given to patients with known glucose 6-phosphate dehydrogenase (G6PD) deficiency nor can it be given to pregnant or lactating women
Systemic bicarbonate infusions are no longer recommended