HOSPITAL PHYSICIAN®

ONCOLOGY BOARD REVIEW MANUAL

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Medical Emergencies in Oncology: I

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I. INTRODUCTION

Recent years have brought advances in cancer therapies, resulting in increased cure rates and survival often because of more aggressive treatment regimens. However, emergencies occur frequently in oncologic patients because of either disease progression or treatment. The morbidity and mortality of these complications is substantial. Only quick access to an emergency department, identification of the underlying pathophysiology, and rapid administration of appropriate therapy (complication specific, disease specific, or both) will prevent death or loss of quality of life.

This is the first part of a 2-part review on oncologic emergencies. The first part discusses the management of metabolic emergencies and neutropenic fever. The second part discusses the management of space-occupying lesions and also provides sample board review questions and answers for self assessment.

II. METABOLIC EMERGENCIES

A. **Tumor lysis syndrome**

1. Definition. The tumor lysis syndrome is a life-threatening derangement of electrolytes caused by massive cytolysis of tumor cells that arises spontaneously or during treatment with chemotherapy or radiation therapy of predominantly hematologic malignancies. It is characterized by the acute development of:[1–3]
   a. Hyperkalemia
   b. Hyperuricemia
   c. Hyperphosphatemia
   d. Hypocalcemia, as a secondary occurrence
   e. Acute renal failure, as a secondary occurrence
2. Etiology
   a. Massive lysis or necrosis of radiosensitive or chemosensitive tumor cells results in a sudden release of intracellular components, causing hyperkalemia, hyperphosphatemia, and hyperuricemia. Steroids have also been described as causing tumor lysis syndrome in patients with acute leukemias and non-Hodgkin's lymphoma.
   b. Calcium phosphate precipitation in the tissue occurs because of acute hyperphosphatemia.
   c. Oxidation of hypoxanthine and xanthine by xanthine oxidase leads to accumulation of uric acid.