

PROTOCOL FOR: Hypercalcemia: Care of the Patient

SUPPORTIVE DATA: Elevated serum calcium level >11 mg/dl. This occurs when the rate of calcium, entering the serum exceeds the rate of removal. However, this may be falsely high if the patient is malnourished and has low protein stores (i.e., low albumin level). The corrected serum calcium is obtained by adjusting the calcium level upward by 0.8 mg for every gram of albumin under 4mg/dl or downward by 0.8 for every gram of albumin over 4gm/d.

Oncologic emergencies display symptoms that progress along a continuum and the goal is to identify and intervene early before a true emergent situation develops.

**DESIRED
PATIENT OUTCOMES:** Patients are assessed for signs and symptoms of oncologic emergencies.

Interventions are implemented promptly before a true emergent situation develops.

**CLINICAL
ASSESSMENT
AND CARE:**

1. Assess Risk Factors: Patients at risk are those with:
 - a. Diagnosis of breast, lung, renal, head and neck cancers (80%)
 - b. Diagnosis of multiple myeloma, lymphoma, leukemia (20%)
 - c. Hyperparathyroidism
 - d. Immobility
 - e. Dehydration
 - f. Renal dysfunction
 - g. Skeletal fractures or bone involvement (metastasis)
 - h. Advanced age
 - i. History of thiazide, diuretic, lithium, estrogen therapy

Assess for signs and symptoms of hypercalcemia, including:

- a. Cardiovascular = arrhythmia, bradycardia leading to heart
- b. Block, cardiac arrest
- c. Neuromuscular = fatigue, weakness leading to stupor, coma
- d. Gastrointestinal = anorexia, constipation, N/V leading to ileus
- e. Renal = polydipsia, polyuria leading to renal failure

Notify physician for:

- a. Change in LOC
- b. Weakness/lethargy
- c. Polyuria/polydispia
- d. Seizures
- e. Arrhythmias/ECG changes

MANAGEMENT

- a. Evaluate laboratory data (serum calcium K+, Na, Phos, BUN/creatinine, EKG, metabolic alkalosis)
- b. Treat underlying condition
- c. Maintain hydration and diuresis, kidney function

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- Mithramycin used to treat by lowering calcium by inhibiting bone resorption and alter metabolism of vitamin D
 - Fluid administration (normal Saline) used to expand the volume and dilute serum to decrease the calcium
 - Lasix generally used to decrease tubular absorption of sodium and calcium
- d. Promote mobility to prevent increased bone reabsorption of calcium resulting from immobility.
- e. Assess bowel function.
- f. Agents used to decrease bone absorption (Inorganic).
- g. Phosphates, Calcitonin, Didronel, Steroids, Aredia).

APPROVAL: Nursing Standards Committee

EFFECTIVE DATE: 6/01

REVISION DATES: 3/02