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THE JIMMY S BILIMORIA FOUNDATION

PALLIATIVE CARE
GUIDELINES
FOR A HOME SETTING IN INDIA

HYPERCALCAEMIA

INTRODUCTION

Hypercalcaemia is the commonest life-threatening metabolic disorder associated with cancer. It produces several distressing symptoms, and management of hypercalcaemia alleviates the symptoms. Hypercalcaemia is defined as serum calcium (corrected) greater than 2.6mmol/L or 10.5mg/dL.

The incidence varies with the underlying malignancy, being most common in multiple myeloma, breast cancer and squamous cell lung cancer. It can occur even in the absence of bone metastasis.

ASSESSMENT

- **Assessment** must determine the underlying cause, effectiveness of treatment and impact on quality of life for the patient and their family (***refer to the Guideline - Symptom Assessment***)
- **Symptoms and signs of Hypercalcaemia**
  - General - dehydration, polydipsia, polyuria, pruritis
  - Neurological - fatigue, lethargy, confusion, myopathy, hyporeflexia, seizures, psychosis and coma
  - Gastrointestinal - anorexia, nausea, vomiting, weight loss, constipation, and ileus
  - Musculoskeletal - muscle, bone pain
  - Cardiac - shortened Q-T interval, prolonged P-R interval, wide T waves, ventricular and atrial arrhythmias and bradycardia

MANAGEMENT

- **Questions to ask before managing hypercalcaemia**
  - Is this the first episode and if not, what is the interval since the previous episode?
  - What is the problem?
  - Can it be reversed?
  - What is the goal of care?
  - Is the treatment appropriate?
  - What are the patient's/carer's wishes?
  - What effect will the relief of symptoms have on the overall general condition?
  - Will active treatment improve the quality of life?

- **Investigations (when appropriate)**

- Serum urea, electrolytes, albumin, and calcium
- Calculate corrected calcium concentration
  - Corrected calcium (mmol/L) = Measured Calcium + ([40 - Serum albumin g/L] x 0.02mmol/L)

    or
  - Corrected calcium (mg/dl) = Measured total serum calcium (mg/dL) + ([4.0-serum albumin g/dL] x 0.8)

- **Refer the patient to hospital if treatment of hypercalcaemia is appropriate**

- **Consider symptom management only, if treatment of hypercalcaemia is not warranted or if the patient has advanced disease with poor prognosis**

- **Management**
  - Stop any drugs that can contribute to/ worsen hypercalcemia (thiazide diuretics, oral calcium supplements, calcitriol, antacids)
  - Urgent treatment is needed, if serum calcium level is 4mmol/L or 16mg/dl and above
  - Rehydrate with intravenous fluids 2 - 3L of fluid (0.9% saline)
  - Volume and rate depend on clinical and cardiovascular status and concentrations of urea and electrolytes
  - After a minimum of 2L of intravenous fluids give bisphosphonate infusion
    - Zoledronic acid 4mg in 100ml normal saline IV over 15 minutes
  - Dental clearance is mandatory before starting bisphosphonates, except in an emergency or acute setting
  - The dosage of bisphosphonates should be adjusted for decreased renal function
  - Bisphosphonates can produce flu-like symptoms
  - Measure concentrations of urea and electrolytes at daily intervals and give intravenous fluids as necessary
  - Normalisation of serum calcium takes 3-5 days
  - Do not measure serum calcium for at least 48 hours after rehydration as it may rise transiently immediately after treatment
  - Patients with repeated episodes or refractory hypercalcaemia should be referred to the care of the oncologist

- **Prevention of recurrent hypercalcaemia**
  - Oncological treatment as appropriate
  - Monitor serum calcium levels and consider continuing bisphosphonates monthly

REFERENCES

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