

Metastatic Bone Disease

by

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Date: 14/11-22

Metastatic Bone Disease

Cancer that begins in an organ, such as the lungs, breast, or prostate, and then spreads to bone is called metastatic bone disease .

More than 1.2 million new cancer cases are diagnosed each year. Approximately 50% of these tumors can spread (metastasize) to the skeleton.

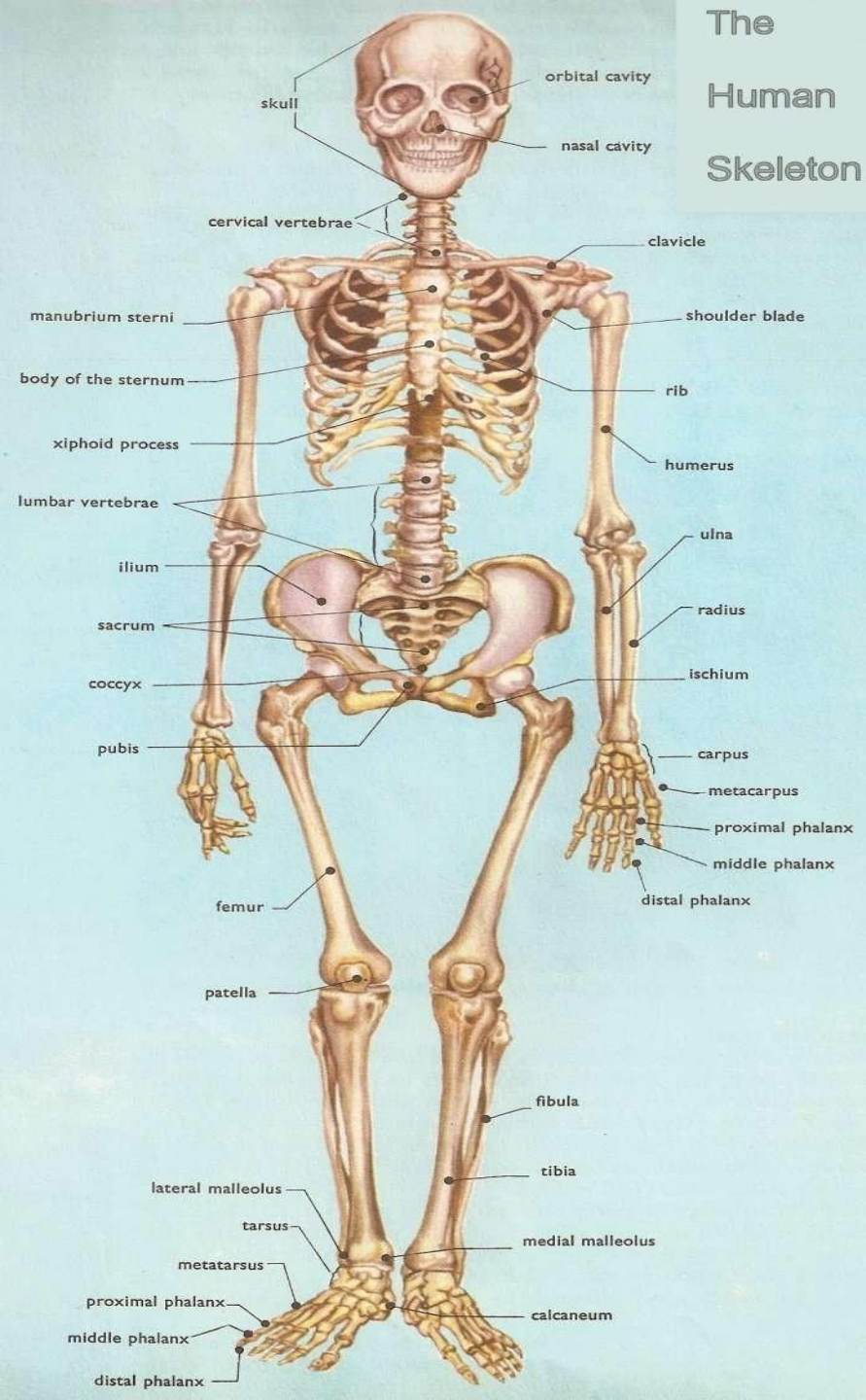
With improved medical treatment of many cancers — especially breast, lung, and prostate — patients are living longer.

The
Human
Skeleton

Bone

Metastases

Cancers that originate at another site (usually breast, prostate or lung) that spread to the bone are called bone metastases



Metastatic Bone Disease

The most common cancers that arise from organs and spread to bone include:

Breast

Lung

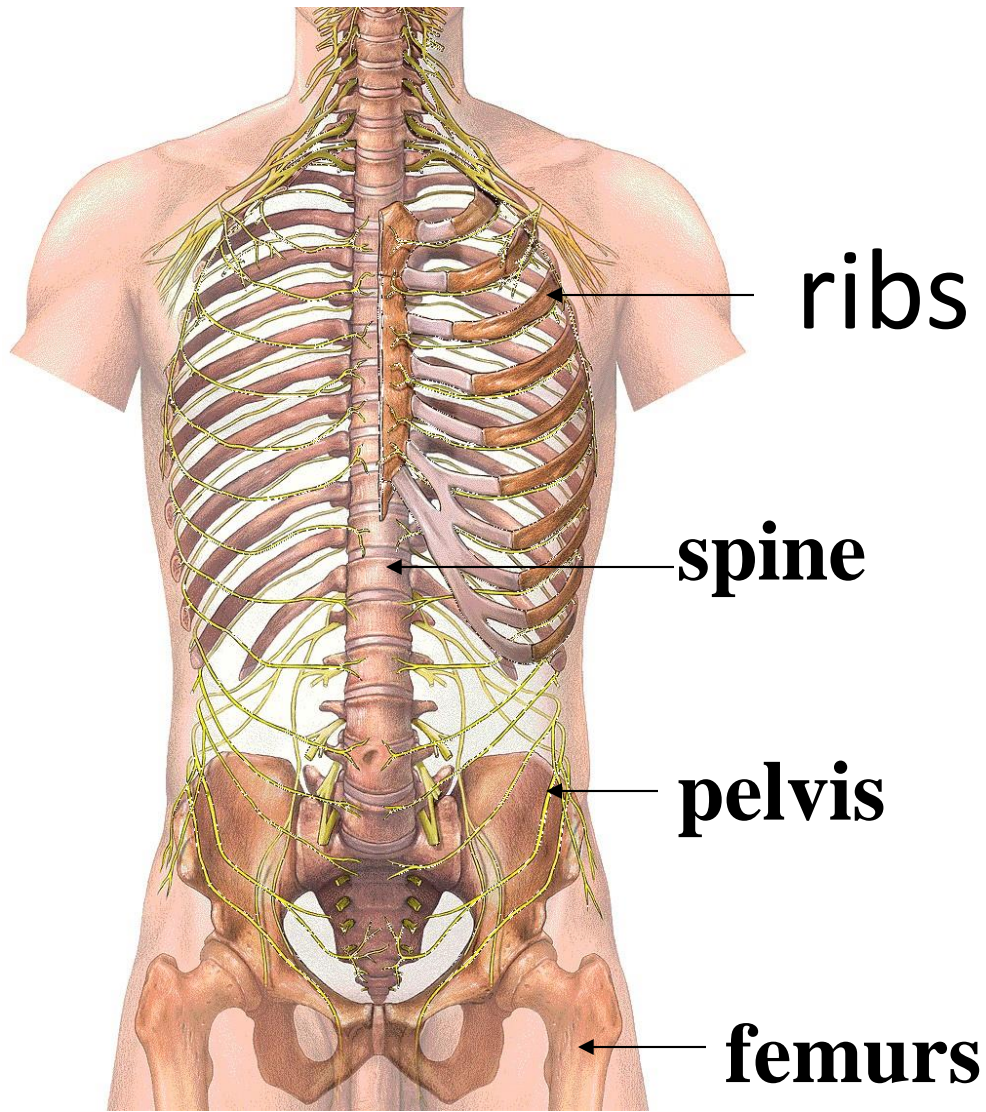
Thyroid

Kidney

Prostate

Cancer most commonly spreads to these sites in the skeleton:

- Spine
- Pelvis
- Ribs
- Skull
- Upper arm
- Long bones of the leg



**Most common
sites for bone
metastases**

Signs and symptoms of bone metastasis

- severe pain
- fragile bones
- bone fractures
- spinal cord compression
- hypercalcemia
- anemia
- spinal instability
- decreased mobility
- rapid loss quality of life for patients
- nerve damage that can lead to paralysis or loss function of limbs

Diagnosis

Imaging studies

- X rays
 - CT
 - MRI
 - Nuclear medicine – technetium bone scan
- Lab studies
- Complete blood count

Erythrocyte sedimentation rate

Biopsy

- bone marrow aspiration or trephine biopsy and CT guided biopsy sample

Treatment Options

Treatment for managing the symptoms of pain and bone weakness, and is not intended to be curative.

The most common treatment options :

➤ **Radiation**

➤ **Medications** to control pain and prevent further spread of the disease

➤ **Surgery** to stabilize bone that is weak or broken.

Several types of radiation therapy are available

Local field radiation : In this procedure, radiation is directed at the metastatic tumor and the immediate adjacent tissue. Entire bone segments or multiple bones can be targeted by local field radiation.

Hemibody irradiation: This treatment is a large field radiation therapy used for widespread metastatic disease.

hemibody irradiation targets the larger fields of the upper body, mid-section, or lower body.

Medication Treatment

Medication treatment options for patients with MBD include:

Chemotherapy: This treatment uses combinations of various drugs to destroy cancer cells. Because these drugs affect the entire system, healthy cells can also be damaged, including white blood cells and platelets. Chemotherapy is done in cycles with rest periods in between to let the blood cell count recover.

Hormone therapy : this drug treatment is used for types of cancer that are affected by hormones. Hormones are chemicals that are produced by glands in the body. In certain types of cancer, hormones can help cancer cells grow and spread, or they can destroy cancer cells and prevent them from growing. Treatment involves either increasing the levels of hormones or blocking hormone production.

Surgical Treatment

During surgery the tumor may be removed and the bone is stabilized with fixation devices, such as wires, plates, rods, pins, nails, and screws.

Nursing intervention relating to:

- assessment,
- patient teaching,
- symptom management, and
- psychosocial support

Nursing assessment

Nursing assessment

Collection Of Subjective Data:

Bone pain in the area of the tumor
worse with activity Fatigue,
Anxiety

Objective Data:

- Bone lumps and masses determining the location and size of tumor
- soft tissue swelling
- Stiff bones
- Weight loss
- fracture
- fevers and night sweats
- Movement problems
- Anemia

Nursing management

- **Acute pain** : disease process , inflammation
- **Altered nutrition :Less than body requirements** consequences of chemotherapy, radiation, surgery, e.g., anorexia, gastric irritation, taste distortions, nausea

- **Fatigue** : altered body chemistry:side effects of pain & other medications, chemotherapy
- **Risk for Infection:** immunosuppression
- **Risk for fluid volume deficit:** excessive losses(vomiting, diarrhea) or impaired intake.
- **Risk for Altered Oral Mucous Membrane:** Side effect of some chemotherapeutic agents
- **Risk for impaired Skin Integrity** : effects of radiation and chemotherapy Fear/Anxiety
- **Low self Esteem** : feelings of lack of control and doubt regarding acceptance by others
- **Fear/Anxiety** : threat of death

Acute Pain

- pain history (location, frequency, duration)
- Evaluate and be aware of painful effects of particular therapies
- Provide nonpharmacological comfort measures (massage, repositioning, backrub) and diversional activities (music, television)
- May refer to pain clinic
- cutaneous stimulation (heat or cold, massage).
- Evaluate pain relief and control at regular intervals.

Altered Nutrition: Less than body requirements

- Monitor daily food intake
- Measure weight daily or as indicated.
- Encourage patient to eat high-calorie, nutrient-rich diet, with adequate fluid intake.
- Administer antiemetic as appropriate.
- Insert and maintain NG or feeding tube for enteric feedings, or central line for total parenteral nutrition (TPN) if indicated.

- **Fatigue :**
- Establish activity goals with patient.
- Assist for sitting and walking
- Monitor vital sign
- Assist with ambulation
- **Risk for Infection:**
- Promote good hygiene by staff and visitors.
- Limit visitor.
- Hand washing practice
- Monitor temperature.
- Assess for signs and symptoms of infection

Risk for Fluid Volume Deficit.

- Monitor I&O
- Monitor vital signs.
- Assess skin turgor and moisture of mucous membranes.
- Note reports of thirst.
- fluid intake to 3000 mL per day as individually
- Observe for bleeding.
- Provide IV fluids as indicated.
- Monitor laboratory studies (CBC, electrolytes serum albumin).

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Risk for Altered Oral mucous Membranes

- Assess dental health and oral hygiene periodically.
- Use of mouthwash
- Brush with soft toothbrush
- Floss gently
- Keep lips moist

- Encourage use of mints or hard candy
- avoid hot or spicy foods,
- Encourage fluid intake as individually tolerated.
- Avoid smoking and alcohol intake.
- Monitor signs of oral superinfection (thrush).
- Culture suspicious oral lesions.

Risk for impaired Skin Integrity

- Assess skin frequently
- Bath warm water and mild soap.
- Encourage patient to avoid vigorous rubbing and scratching over the skin
- Avoid applying heat
- wearing soft, loose cotton clothing
- Assess skin, IV site, vein for erythema, edema, tenderness, itching and burning; swelling, soreness

- Advise patients receiving 5-fluorouracil (5-FU) and Methotrexate to avoid sun exposure.
- Review expected dermatologic side effects seen with chemotherapy (rash, hyperpigmentation, and peeling of skin on palms). hairs
- Inform patient that if alopecia occurs, hairs could grow back after completion of chemotherapy.

Low Self-Esteem

- Discuss with patient how the diagnosis and treatment are affecting the patient's personal life, home and work activities.
- Review anticipated side effects associated with a particular treatment, including possible effects on sexual activity and sense of attractiveness and desirability (alopecia). Tell patient that not all side effects occur, and others may be minimized or controlled.
- Provide emotional support for patient during diagnostic tests and treatment phase.

Fear/Anxiety

- Review patient's previous experience with cancer.
- Encourage patient to share thoughts and feelings.
- Provide open environment in which patient feels safe to discuss feelings
- Maintain frequent contact with patient.
Permit expressions of anger, fear,

- Explain the recommended treatment, its purpose, and potential side effects. Help patient prepare for treatments.
- Explain procedures, providing opportunity for questions and honest answers. Stay with patient during anxiety-producing procedures and consultations.
- Promote calm, quiet environment.