What you need to know about: Bone Cancer

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Bone Cancer

• Bone cancer is cancer that arises first in the bone.
• True bone cancer is called osteosarcoma
• Bone is often a secondary site of metastases for other types of cancer such as prostate cancer, lung cancer, breast cancer, etc.
Risk Factors

• The exact cause for bone cancer is not known, but there are many risk factors for the disease; some can be avoided while others can not.

• Risk factors include:
  – Smoking
  – Age
  – Race
  – Having other diseases such as retinoblastoma
  – Treatment with radiation
Biology of Cancer

- Normal Cell Cycle

- Cancer Cell Cycle
  - Divide without appropriate signals
  - Can continue growing even though they are in contact with other cells
  - Cells continue through the cell cycle without the “all clear” signal from the checkpoint regulators
DNA Damage

- One of the leading causes of bone cancer is radiation
- Radiation results in:
  - Point mutations
  - Chromosomal damage
  - Break DNA
- Point mutations occur when bases in DNA are changed
- There are different types of point mutations including:
  - Nonsense
  - Missense
  - Frameshift
Treatment

• Surgery
  – Removes the tumor mass from initial location

• Radiation Therapy
  – Uses high energy waves targeted to cancer growth
  – Waves cause damage within the cell, disrupt cellular processes, prevent accurate cell division, and cause the cell to die
  – Death of cells causes the tumor to shrink
Prevention

• There is way to truly prevent bone cancer
• General cancer preventions include:
  – Diets low in fat
  – Exercise
  – Eat lots of fruits and vegetables
  – Do not smoke
  – Limit consumption of alcoholic beverages
  – Limit UV radiation