67 year old male with diffuse bone pain.

Edward Gillis, DO

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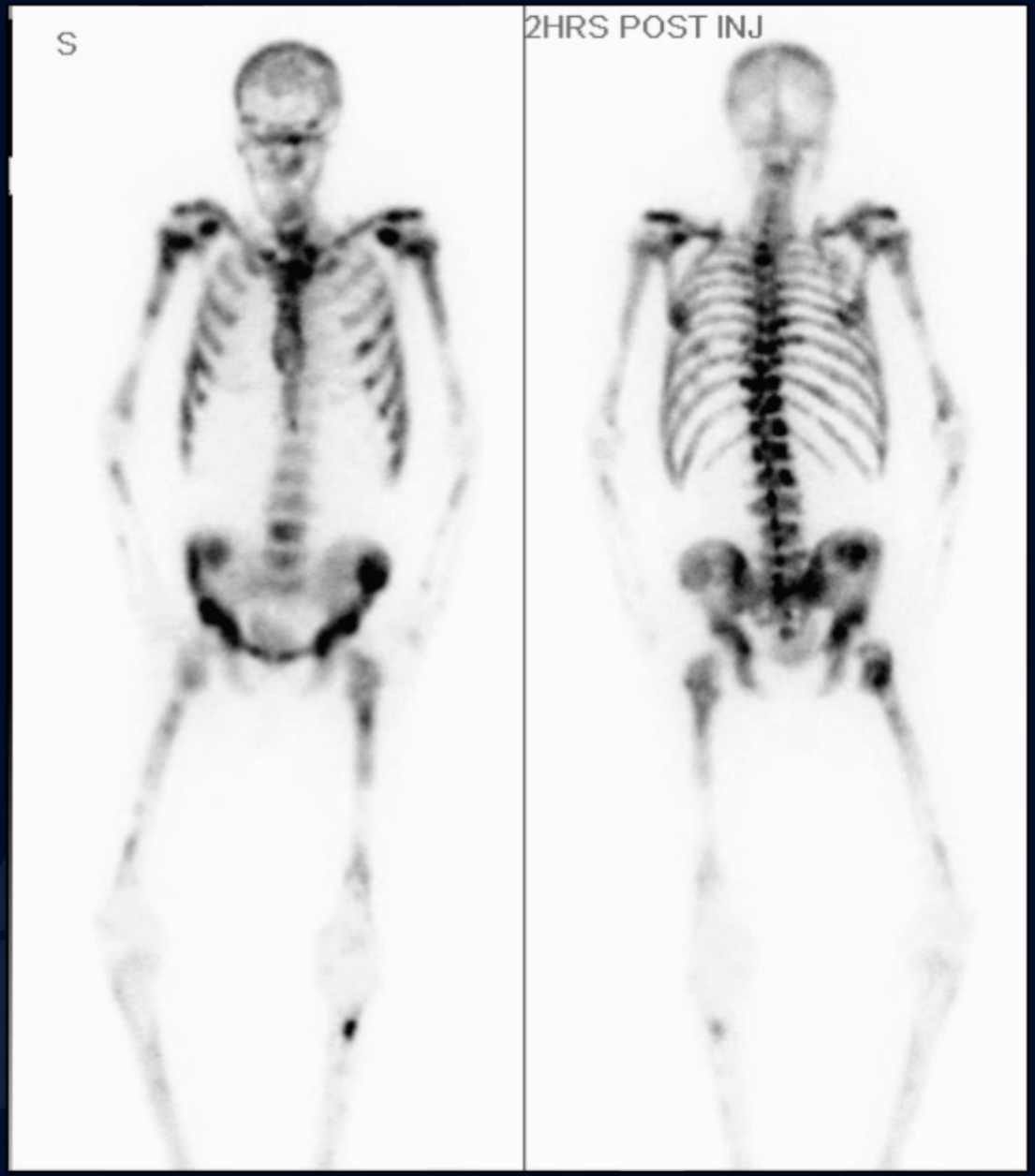

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Superscan secondary to metastatic prostate cancer

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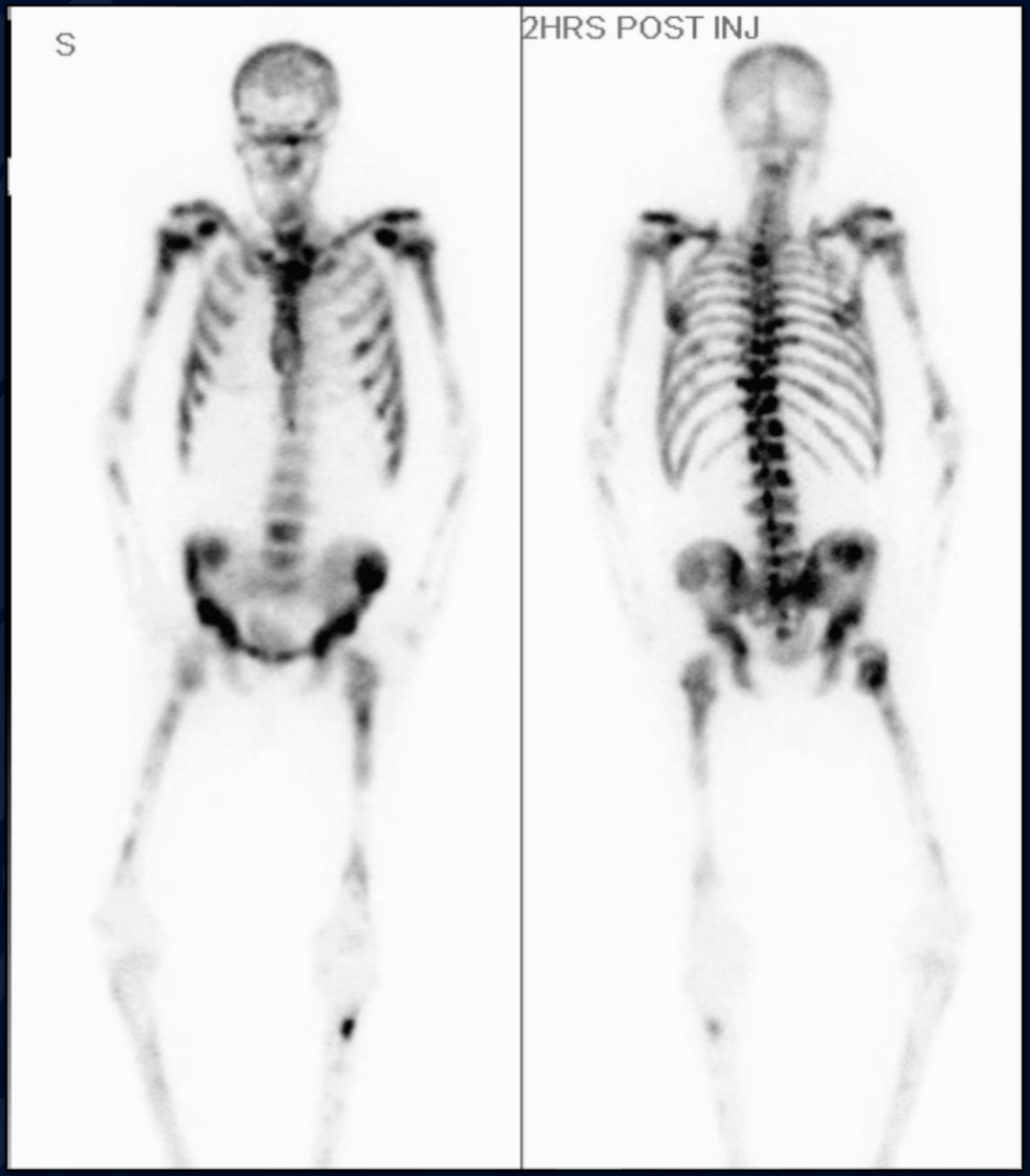

Bone scan showing diffusely increased Tc-99m-MDP uptake within the spine, ribs, proximal humeri, distal clavicles, and pelvis. No activity is present within the kidneys and only minimal activity within the urinary bladder. Lesions are also present within the proximal left femur and tibia.

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Superscan

Imaging Features

- Solitary or multiple foci of diffusely increased radiotracer uptake throughout the skeleton relative to soft tissue.
- Will see diffuse or heterogeneous/patchy distribution within the axial skeleton.
- If secondary to metabolic bone disease, uptake is more uniform and extends to the distal appendicular skeleton.
  - Will also see intense calvarial uptake disproportionate to the remainder of the skeleton.
- Little to absent genitourinary activity
  - “Absent kidney” sign

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Superscan

General Features

- Mechanism for reaction is likely diffuse reactive bone formation.
- Secondary to metastatic, metabolic, or hematologic disease increasing osteoblastic activity.
- Due to the significantly increased uptake within the bones, less is available for soft tissues, resulting in an increased skeleton to soft tissue ratio.
- Generally faint or absent genitourinary activity.
- Normal skeletal to renal ratio of absorption:isotope is 40%:60%
- In superscan, this ratio can be as low as 86%:14%

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Superscan

Causes of Superscan

- Metastatic disease
  - Prostate, breast, lung most common.
  - Multiple myeloma and renal adenocarcinoma usually do not show increased uptake.
- Metabolic disease
  - Renal osteodystrophy, Paget's disease, hyperparathyroidism
  - Less common: Hyperthyroidism, hypervitaminosis D
  - Rare: Osteopetrosis
- Hematologic Disease
  - Leukemia, lymphoma, Waldenstrom's, myeloproliferative disorders,
  - Rare: aplastic anemia, mastocytosis

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References

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2. Manohar PR, Rather TA, Khan SH, Malik D. Skeletal Metastases Presenting as Superscan on Technetium 99m Methylene Diphosphonate Whole Body Bone Scintigraphy in Different Type of Cancers: A 5-Year Retro-prospective Study. *World Journal of Nuclear Medicine*. 2017;16(1):39-44. doi:10.4103/1450-1147.181153.

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