Medical Uses of Technetium–99m

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Technetium-99m

Technetium-99m is a metastable isotope that gives off gamma rays to become a more stable version of the same isotope with no change in either atomic or mass number.

Technetium-99m is one of the most commonly used isotopes in medicine because it produces no alpha or beta particles that could cause unnecessary damage to cells and because it has a half life of only about six hours.

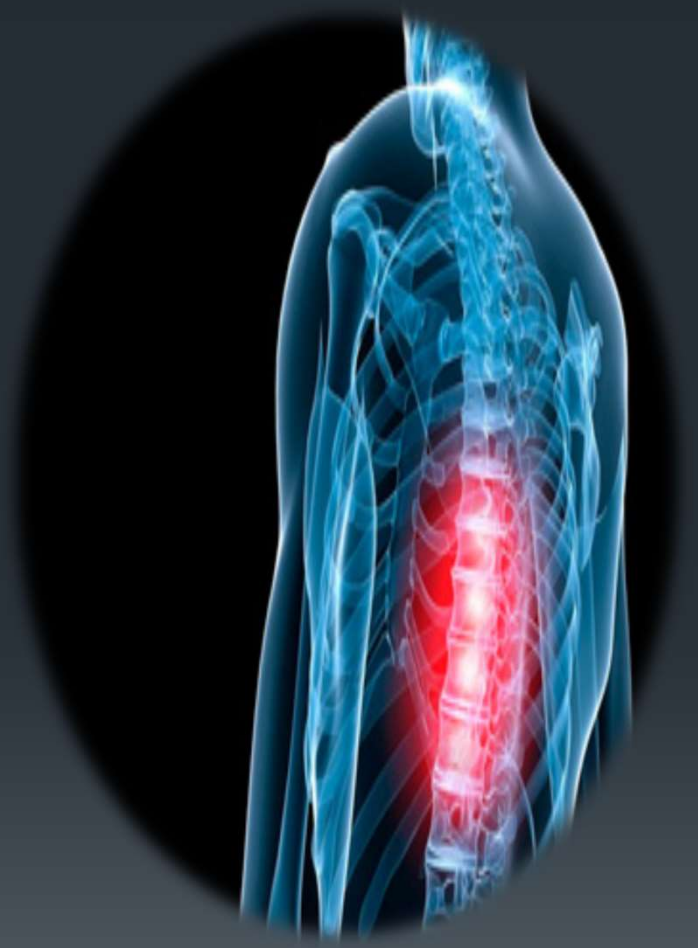
A) Bone Scan

1) The nuclear medicine technique is sensitive to areas of unusual bone rebuilding activity.

2) The technique therefore is sensitive to fractures and bone reaction to bone tumors, including metastases.

3) For a bone scan, the patient is injected with a small amount of 99mTc-medronic acid and then scanned with a gamma camera

4) Medronic acid is anchoring the radioisotope to that specific region.



B) Cardiac Ventriculography

In cardiac ventriculography, ^{99m}Tc, is injected, and the heart is imaged to evaluate the flow through it, to evaluate coronary artery disease, valvular heart disease, congenital heart diseases, cardiomyopathy, and other cardiac disorders.

C) Blood Pool Labeling

when ^{99m}Tc is combined with a tin compound, it binds to red blood cells and can therefore be used to map circulatory system disorders. it is commonly used to detect gastrointestinal bleeding sites.