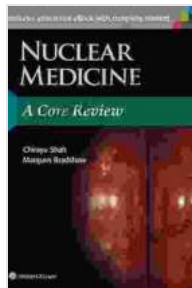


Nuclear Medicine Core Review: A Comprehensive Guide to the Essentials



Nuclear Medicine: A Core Review

★★★★★ 5 out of 5

Language	: English
File size	: 118255 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Print length	: 332 pages



Nuclear medicine is a rapidly growing field that uses radioactive isotopes to diagnose and treat diseases. This comprehensive review provides an overview of the essential concepts in nuclear medicine, including the basics of radioactivity, nuclear medicine imaging, and nuclear medicine therapy.

Basics of Radioactivity

Radioactivity is the emission of radiation by an unstable nucleus.

Radioactive isotopes are isotopes of an element that have an unstable nucleus. When a radioactive isotope decays, it emits radiation in order to reach a more stable state. The most common types of radiation emitted by radioactive isotopes are alpha particles, beta particles, and gamma rays.

- **Alpha particles** are helium nuclei. They are large and have a relatively low penetrating power, so they can be stopped by a sheet of paper or a few centimeters of air.

- **Beta particles** are electrons or positrons. They are smaller and have a higher penetrating power than alpha particles, but they can be stopped by a few millimeters of aluminum or a few meters of air.
- **Gamma rays** are photons of high-energy electromagnetic radiation. They are very penetrating and can only be stopped by thick layers of lead or concrete.

Nuclear Medicine Imaging

Nuclear medicine imaging is a technique that uses radioactive isotopes to create images of the body. The radioactive isotope is injected into the body, where it travels to the target organ or tissue. The radioactive isotope emits radiation, which is detected by a gamma camera. The gamma camera creates an image of the distribution of the radioactive isotope in the body, which can be used to diagnose and treat diseases.

There are many different types of nuclear medicine imaging scans, including:

- **Bone scans** are used to diagnose and monitor bone diseases, such as osteoporosis and cancer.
- **Cardiac scans** are used to diagnose and monitor heart disease, such as coronary artery disease and heart failure.
- **Lung scans** are used to diagnose and monitor lung diseases, such as pneumonia and lung cancer.
- **Thyroid scans** are used to diagnose and monitor thyroid disorders, such as hyperthyroidism and hypothyroidism.

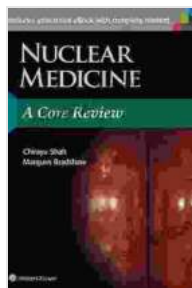
Nuclear Medicine Therapy

Nuclear medicine therapy is a technique that uses radioactive isotopes to treat diseases. The radioactive isotope is injected into the body, where it travels to the target organ or tissue. The radioactive isotope emits radiation, which kills the target cells.

Nuclear medicine therapy is used to treat a variety of diseases, including:

- **Cancer**
- **Thyroid disorders**
- **Bone marrow disorders**
- **Pain**

Nuclear medicine is a powerful tool that can be used to diagnose and treat a variety of diseases. This comprehensive review has provided an overview of the essential concepts in nuclear medicine, including the basics of radioactivity, nuclear medicine imaging, and nuclear medicine therapy.



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