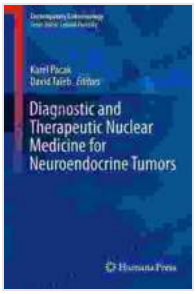
Diagnostic and Therapeutic Nuclear Medicine for Neuroendocrine Tumors

Neuroendocrine tumors (NETs) are a group of rare tumors that can occur anywhere in the body. They are typically slow-growing and can be difficult to diagnose. Nuclear medicine plays an important role in the management of NETs, providing both diagnostic and therapeutic options.



Diagnostic and Therapeutic Nuclear Medicine for Neuroendocrine Tumors (Contemporary Endocrinology)

★★★★★ 5 out of 5

Language	: English
File size	: 14594 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Print length	: 965 pages

Diagnostic Applications

Nuclear medicine imaging can be used to diagnose NETs and to determine their extent. The most commonly used imaging agent for NETs is octreotide, a radiolabeled somatostatin analog. Octreotide binds to somatostatin receptors, which are expressed on the surface of NETs. This allows the radiolabeled octreotide to be visualized on nuclear medicine scans, such as SPECT (single-photon emission computed tomography) and PET (positron emission tomography).

Other radiolabeled peptides that can be used for NET imaging include DOTATOC and DOTATATE. These peptides bind to different somatostatin receptors than octreotide, which can provide additional information about the NET.

In addition to somatostatin analogs, other radiolabeled agents that can be used for NET imaging include FDG (fluorodeoxyglucose) and MIBG (metaiodobenzylguanidine). FDG is a glucose analog that is taken up by cells with a high metabolic rate, such as NETs. MIBG is a sympathomimetic agent that is taken up by cells that express the norepinephrine transporter, such as NETs.

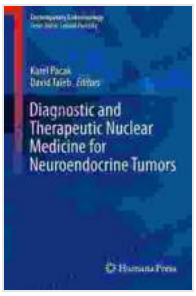
Therapeutic Applications

Nuclear medicine therapy can be used to treat NETs that are not amenable to surgery or other local therapies. The most commonly used therapeutic radioisotope for NETs is lutetium-177 (^{177}Lu). ^{177}Lu is a beta-particle emitter that can deliver a high dose of radiation to NETs while sparing surrounding healthy tissue.

^{177}Lu can be administered to NETs via a variety of routes, including intravenous, intra-arterial, and intratumoral. The route of administration will depend on the location and size of the NET.

Other radioisotopes that can be used for NET therapy include yttrium-90 (^{90}Y) and iodine-131 (^{131}I). ^{90}Y is a beta-particle emitter that can be used to treat NETs that are refractory to ^{177}Lu. ^{131}I is a beta-particle emitter that can be used to treat NETs that express the sodium-iodide symporter.

Nuclear medicine plays an important role in the management of NETs. It provides both diagnostic and therapeutic options that can help to improve the outcomes of patients with this rare disease.



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