

Applications of computed tomography in medical diagnosis.

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Abstract

A Computed Tomography (CT) scan, commonly called a CT, is a radiographic imaging test. The first scanner he installed in 1974. Since then, advances in technology and mathematics have made it possible to compute a single image into his two-dimensional informative image. A CT scan is basically an x-ray examination that rotates a series of radiation around a specific part of the body to create a computer-generated cross-sectional image. The advantage is that it contains detailed information for specific regions of the cross section, thus eliminating the need for overlapping images, a significant advantage over simple film. CT scans provide excellent clinicopathological correlation of suspected disease. CT scans improve a doctor's ability to accurately diagnose a patient's disease. Low-dose CT scans have proven useful in preventive medicine and cancer screening. The study was originally called CAT scan. This is an axial CT scan where the table is moved each time an axial image is acquired.

Keywords: Computed tomography, X-ray, 3D image.

Introduction

Computed tomography, commonly known as CT scan, is a medical imaging technique that uses X-ray technology to create detailed images of the internal structures of the human body. The images produced by CT scans are so detailed that medical professionals can diagnose many different conditions and diseases. The concept of CT scanning has revolutionized the field of diagnostic imaging since it was first introduced in the early 1970s. Today, CT scans are used in the medical field for a variety of purposes, including cancer detection, heart disease diagnosis, and trauma assessment [1].

How does CT scan work?

The CT scan process uses X-ray technology to create cross-sectional images of the body. The patient is placed on a motorized table and moved through a ring-shaped machine called a CT scanner. As the patient moves through the scanner, X-rays are sent down the body and detected on the other side by a series of detectors. The x-rays taken of her are processed by a computer and reconstructed into a detailed 3D image of her anatomy. Images produced by CT scans can be viewed from any angle and provide a level of detail unmatched by any other imaging modality. Use of CT scan [2]

CT scans are used in a variety of medical settings, including hospitals, clinics, and ambulatory facilities. Some of the most common uses of CT scans include [3],

- ✓ A CT scan can be used to detect the presence of tumors or other abnormal growths in the body. CT scans are especially useful for detecting lung, liver, and pancreatic cancers.

- ✓ CT scans are often used to evaluate trauma such as fractures, internal bleeding, and organ damage. CT scans help health care professionals determine the severity of the injury and plan appropriate treatment.
- ✓ CT scans can be used to diagnose a variety of heart conditions, such as blocked coronary arteries, heart valve problems, and aneurysms.
- ✓ CT scans can be used to diagnose a variety of brain diseases, including stroke, intracerebral hemorrhages, and tumors [4].

Benefits and risks

A CT scan is considered a safe, non-invasive procedure. Unlike other imaging tests such as MRI and ultrasound, CT scans use ionizing radiation. Although radiation exposure is low, repeated CT scans can increase a patient's cancer risk over time. Also, some patients have allergic reactions to the contrast agents used during CT scans. Patients who are pregnant or have kidney problems may be advised to avoid CT scans due to the potential risks [5].

Conclusion

Computed tomography has revolutionized the field of diagnostic imaging by providing detailed 3D images of the internal structures of the human body. CT scans are used in the medical field for a variety of purposes and are useful tools in the diagnosis and treatment of many conditions and diseases. However, it is important that the patient understands the potential risks associated with her CT scan and discusses these risks with her doctor before having a CT scan.

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