

# Medical Imaging: A Primer for Attorneys

## I. Introduction

As Lawyers representing victims of serious injuries, medical malpractice and wrongful deaths, we must have a robust knowledge and understanding of the underlying medicine causing our client's misfortune. While some causes are visible to the naked eye, like an open gash, others may be less visible to the naked eye. Doctors often use different diagnostic imaging to diagnose their patient's illness.

Which diagnostic imaging techniques should be considered for your client's injury? Which imagings may make your client's injury more visible? And if the x-ray's impression is normal, is your client a liar or malingerer for consistently reporting the same symptoms? Understanding the injury and the available technology to document the injury, can be a powerful tool.

There are different types of diagnostic imaging techniques used in the medical community to diagnosis the patient's injury: x-rays, MRIs, CT scans, PET Scan or SPECT; some imagings with contrast and others without contrast. This article explores the different imagings doctors use to diagnose a patient's ailment.

## ii. Different Machines Capture Different Imaging(S)

### 1) CAT Scan: What Is It?

Computerized Axial Tomography Scan or CAT Scan and Computerized Tomography Scan or CT scan are different names used for the same machine. All names are used interchangeably and refer to the same machine.

Computerized Axial Tomography Scan (CAT scan) is an imaging machine that combines x-rays with computer technology to produce a detailed, cross-sectional image of the body. In simple terms, CT scan is a more sophisticated, powerful x-ray that takes 360-degree pictures of internal organs, the spine, and vertebrae.<sup>1</sup> With a CT scan, unlike an X-ray, the physician can view the imaged

Continued on page 16

<sup>1</sup> Herman, G.T., Fundamentals of Computerized tomography: Image reconstruction from projection, 2<sup>nd</sup> edition, Springer, 2009.

By: Parisima Roshanzamir & Jayme Simpson  
Column Editor: Ben Coughlan



Parisima Roshanzamir is the owner and founder of Roshanzamir law, a trial firm dedicated to representing victims of serious personal injury and wrongful death cases throughout California. Parisima can be reach via e-mail at

[Paris@Roshanzamirlaw.com](mailto:Paris@Roshanzamirlaw.com).

Jayme Simpson is a trial lawyer and managing partner of Simpson Law Group. Her and her father, Sean Simpson, represent clients with personal injury or wrongful death claims. Jayme can be reached at [Jayme@SimpsonLawGroup.com](mailto:Jayme@SimpsonLawGroup.com).

body part at different angles and enhance structures from the image.<sup>2</sup>

**i. What is a CT or CAT Scan used for?**

A CAT scan produces detailed images of bones, organs, soft tissue and blood vessels all at the same time. It provides details of the bony structures of the body and detects presence of trauma to the internal organs, including injuries to the lungs, heart, liver, spleen, kidneys, or bowel. If your client has been involved in a traumatic motor vehicle collision, or a fall, a CT scan can detect evidence of perforation or rupture to the internal organs.<sup>3</sup> CT scans are also valuable machines for other diagnostic purposes, including detecting various types of cancer, heart disease, and musculoskeletal disorders.<sup>4</sup>

As it most relates to representation of victims of personal injury or

<sup>2</sup> Id.

<sup>3</sup> Computed Tomography(CT), Radiologyinfo.org, <https://www.radiologyinfo.org/en/info.cfm?pg=bodyct>, 2018

<sup>4</sup> Computed Tomography(CT), Radiologyinfo.org, <https://www.radiologyinfo.org/en/info.cfm?pg=bodyct>, 2018

medical malpractice the following is a non-exhaustive list of some causes CT scan can detect

- Imaging bones, organs, soft tissue and blood vessels at the same time
- Injuries to bony structures
- Trauma to internal organs
- Detecting cancers
- Detecting heart disease<sup>5</sup>

**ii. CT with contrast or without contrast: what is the difference?**

You may have reviewed a medical record and noticed terms like “w/contrast” or “w/o contrast” written next to the procedure: With contrast signifies that the physician has ordered contrast dyes to be injected into the patient (your client); and without contrast means no dyes were injected. Dyes may be injected to make the structures within the body more visible on the CT scan.

<sup>5</sup> Dr. Sanjeev Athala, *A tale of two scans: which is better – a CT scan or an MRI*, The Sentinel, <http://hanfordsentinel.com/news/local/a-tale-of-two-scans-which-is-better-/>article\_

CT scan when compared with an x-ray captures larger amount of data, which later allows the physician to view the body part at different angles without having the patient exposed to additional radiation. The imaging is also more detailed and sharp when compared to an x-rays.

**2) MRI: What Is It?**

Magnetic Resonance Imaging or MRI combines advanced computer system and magnet and radio waves to produce detailed high-resolution cross-section images of bones and soft structures inside the body.

While X-ray or CT scans use radiation to detect the abnormality in the body, an MRI machine uses the body’s natural magnetic properties to produce detailed images from the area of the body being imaged.<sup>6</sup>

CONTINUED ON PAGE 32

<sup>6</sup> How does it work: Magnetic resonance imaging, Abi Berger, US national Library of Medicine, National Institutes of health, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1121941/>, Jan 5 2002



**Remember!**

**CASD’s Website**

*has a virtual treasure trove of documents in its Document Bank under the “Databanks” tab.*

**Check them out!**

CASD has teamed up with TrialSmith to provide you access to various document banks including Expert Bank, Brief Bank and Deposition Bank.

We encourage attorney members to make use of these resources and to assist others by “depositing” materials for others to use.

With CASD, you “Never Stand Alone!”

[www.CASD.org/databank](http://www.CASD.org/databank)

**i. What is MRI good for?**

MRI can detect a variety of conditions, depending on the area of body or body part it has been used. For example, a brain MRI may be used to detect:

- Damage to the blood vessels
- Problems with the structure of the brain
- Stroke
- Detection of some types of brain injuries
- Tumor

MRI of the spine may be used to detect:

- Bulge or herniated disc(s) in the spine
- Impingement of the nerve roots
- Foraminal narrowing or foraminal stenosis of the spine
- Lordosis in the spine
- Fracture(s) in the disc of the spine
- Disc Desiccation or degenerative changes within the spine

An MRI may also be used to check the health of different organs including

- Prostate (Men)
- Breast (Women)
- Ovaries (Women)
- Liver
- Kidneys

The above list is not an exhaustive list of the different body parts or purposes for which an MRI machine may be used. Generally an MRI is an imaging tool that can provide a detailed, high resolution cross sectional imaging of organs, soft tissues, and internal structures including the spine and brain.

**ii. MRI with contrast or without contrast: what is the difference?**

Much like the CT scan, MRI may be performed with or without contrast. The main difference between the two is the quality of imaging that is produced at the end. The MRI with

contrast highlights certain parts of the soft tissue allowing the radiologist to more easily detect the abnormality.<sup>7</sup>

If your client has never had an MRI procedure complete, it may be helpful to talk to your client letting him or her know that the procedure is painless, but expect the machine to be loud.

**3) PET or SPECT: What Are They?**

Positron emission tomography (PET) and Single photon emission computed tomography (SPECT) are nuclear medicine imaging techniques which provide metabolic and functional information unlike CT and MRI. Both the PET and the SPECT test use a special type of camera and a tracer (radioactive chemical) to look at organs in the body. The tracer detects a special substance (such as glucose) that collects in cells using a lot of energy, such as cancer cells.<sup>8</sup>

*Continued on page 33*

<sup>7</sup> Southwest diagnostic Centers, <https://swdc-cs.com/mri-contrast-vs-without-best/>

<sup>8</sup> Positron Emission Tomography (PET): Test overview, <https://www.webmd.com/cancer/positron-emission-tomography#1>.



**i. PET or SPECT: Which is better?**

The main difference between SPECT and PET scans is the type of radiotracers used. While SPECT scans measure gamma rays, the decay of the radiotracers used with PET scans produce small particles called positrons.<sup>9</sup> The SPECT scan has less contrast and spatial resolution, while the PET scan has better contrast and spatial resolution.<sup>10</sup>

When your client goes in for a PET or SPECT scan of the brain, they will be injected with the tracer. Then, for approximately thirty minutes the patient will undergo a memory test to stimulate the brain during the tracer uptake process. After the thirty minutes, the scan will be conducted. The tracer gives off tiny positively charged particles (positrons). The camera records the tracer and turns the recording into pictures on a computer.

**ii. What is it good for?**

A single PET or SPECT exam can provide information that once would have required several medical studies and possibly surgery. PET scans are most often used to help the physician detect cancer and monitor response to treatment.<sup>11</sup> SPECT and PET scans are

also used to evaluate heart disease and neurological conditions.<sup>12</sup> As it related to neurological conditions, a PET scan can detect some types of brain injury where there may have been no positive findings in CT or MRI scans.

**4) EMG: What Is It?**

An electromyogram (EMG) measures the electrical activity of muscles at rest and during contraction. Nerve conduction studies measure how well and how fast the nerves can send electrical signals.<sup>13</sup> Nerves control the muscles in the body with electrical signals called impulses.

During the EMG testing, your client may feel some discomfort depending on how strong the impulse is. On average, the needle exam for one extremity usually takes 15 to 20 minutes. Typically, there is no pain once the test is finished, but there are times when the muscles feel sore for a day or two after the EMG.

**i. What is it good for?**

An EMG, may benefit a patient who has signs or symptoms that may indicate a nerve or muscle damage. Such symptoms may include:

- Tingling
- Numbness
- Muscle weakness

- Muscle pain or cramping
- Certain types of limb pain

EMG results are often necessary to help diagnose or rule out a number of conditions. An EMG can detect carpal tunnel syndrome or peripheral neuropathies which affects nerves outside the spinal cord (peripheral nerves). EMG testing can also detect Disorders that affect the nerve root, such as a herniated disk in the spin.

**III. CONCLUSION**

If your client is continually and consistently reporting the same undiagnosed symptoms, and no physician has ordered a diagnostic imaging that may rule out or detect an ailment, you may talk to your client, his or her physician and suggest the diagnostic imaging that may help capture the cause of your client's symptoms. Sometimes a lawyer has the better big picture idea of the client's symptoms than certain medical specialists who are only hearing about certain symptoms. **TBN**

*The information in this article is not intended to be health advice. All content is for informational purposes only; and not intended to be a substitute for professional medical advice, diagnosis, or treatment.*

9 SPECT vs PET by Dr. Derek Smith and Dr. Ayush Goel, <https://radiopaedia.org/articles/spect-vs-pet>.

10 Id.

11 Positron Emission Tomography - Computed Tomography (PET/CT), <https://www.radiologyinfo.org/en/info.cfm?pg=pet>.

12 Id.

13 Michigan Medicine: University of Michigan: Electromyogram (EMG) and Nerve Conduction Studies, <http://www.uofmhealth.org/node/659367>.

## Mission Statement

*Consumer Attorneys of San Diego is a professional association that serves and promotes the needs and interests of trial lawyers in pursuit of a fair and effective legal system.*

*We preserve and raise standards of trial advocacy through innovative continuing legal education, and create opportunities for our members to support and inspire one another through networking, collegiality and community outreach.*

# TrialBarNews

Volume 41, Issue 4 ■ April 2018

President	Dana Grimes
Editor-in-Chief	Dana Grimes
Editor Emeritus	Kerry Hoxie

## IN THIS ISSUE

- 3 Confrontation *Grimes*
- 5 Fee Shifting in FEHA Cases *Swan*
- 7 Got PAGA? *Spitzer*
- 9 Out of State Car Accidents *Verschueren*
- 11 CIGA & Bad Faith *Copley*
- 13 Avoiding Malpractice *Stanford*
- 15 Medical Imaging *Roshanzamir & Simpson*
- 17 MEMBERS SECTION
- 21 Labor Trafficking *Magaña*