

Fundamentals Of Musculoskeletal Ultrasound Fundamentals Of Radiology

Radiology

Examples of subspecialty training in radiology include abdominal imaging, thoracic imaging, cross-sectional/ultrasound, MRI, musculoskeletal imaging,

Radiology (RAY-dee-AHL-ə-jee) is the medical specialty that uses medical imaging to diagnose diseases and guide treatment within the bodies of humans and other animals. It began with radiography (which is why its name has a root referring to radiation), but today it includes all imaging modalities. This includes technologies that use no ionizing electromagnetic radiation, such as ultrasonography and magnetic resonance imaging (MRI), as well as others that do use radiation, such as computed tomography (CT), fluoroscopy, and nuclear medicine including positron emission tomography (PET). Interventional radiology is the performance of usually minimally invasive medical procedures with the guidance of imaging technologies such as those mentioned above.

The modern practice of radiology involves...

Medical ultrasound

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Medical ultrasound includes diagnostic techniques (mainly imaging) using ultrasound, as well as therapeutic applications of ultrasound. In diagnosis, it is used to create an image of internal body structures such as tendons, muscles, joints, blood vessels, and internal organs, to measure some characteristics (e.g., distances and velocities) or to generate an informative audible sound. The usage of ultrasound to produce visual images for medicine is called medical ultrasonography or simply sonography, or echography. The practice of examining pregnant women using ultrasound is called obstetric ultrasonography, and was an early development of clinical ultrasonography. The machine used is called an ultrasound machine, a sonograph or an echograph. The visual image formed using this technique is...

Elastography

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Elastography is any of a class of medical imaging diagnostic methods that map the elastic properties and stiffness of soft tissue. The main idea is that whether the tissue is hard or soft will give diagnostic information about the presence or status of disease. For example, cancerous tumours will often be harder than the surrounding tissue, and diseased livers are stiffer than healthy ones.

The most prominent techniques use ultrasound or magnetic resonance imaging (MRI) to make both the stiffness map and an anatomical image for comparison.

Hip dysplasia

(August 2019). "Genetics of developmental dysplasia of the hip: Recent progress and future perspectives". Journal of Musculoskeletal Surgery and Research

Hip dysplasia is an abnormality of the hip joint where the socket portion does not fully cover the ball portion, resulting in an increased risk for joint dislocation. Hip dysplasia may occur at birth or develop in early life. Regardless, it does not typically produce symptoms in babies less than a year old. Occasionally one leg may be shorter than the other. The left hip is more often affected than the right. Complications without treatment can include arthritis, limping, and low back pain. Females are affected more often than males.

Risk factors for hip dysplasia include female sex, family history, certain swaddling practices, and breech presentation whether an infant is delivered vaginally or by cesarean section. If one identical twin is affected, there is a 40% risk the other will also...

Radiography

Brant WE, Helms CA (2007). "Diagnostic Imaging Methods". Fundamentals of Diagnostic Radiology (3rd ed.). Philadelphia: Lippincott Williams & Wilkins. p

Radiography is an imaging technique using X-rays, gamma rays, or similar ionizing radiation and non-ionizing radiation to view the internal form of an object. Applications of radiography include medical ("diagnostic" radiography and "therapeutic radiography") and industrial radiography. Similar techniques are used in airport security, (where "body scanners" generally use backscatter X-ray). To create an image in conventional radiography, a beam of X-rays is produced by an X-ray generator and it is projected towards the object. A certain amount of the X-rays or other radiation are absorbed by the object, dependent on the object's density and structural composition. The X-rays that pass through the object are captured behind the object by

a detector (either photographic film or a digital detector...

Spinal stenosis

Institute of Arthritis and Musculoskeletal and Skin Diseases. 11 April 2017. Retrieved 19 December 2017. "Spinal Stenosis". National Institute of Arthritis

Spinal stenosis is an abnormal narrowing of the spinal canal or neural foramen that results in pressure on the spinal cord or nerve roots. Symptoms may include pain, numbness, or weakness in the arms or legs. Symptoms are typically gradual in onset and improve with leaning forward. Severe symptoms may include loss of bladder control, loss of bowel control, or sexual dysfunction.

Causes may include osteoarthritis, rheumatoid arthritis, spinal tumors, trauma, Paget's disease of the bone, scoliosis, spondylolisthesis, and the genetic condition achondroplasia. It can be classified by the part of the spine affected into cervical, thoracic, and lumbar stenosis. Lumbar stenosis is the most common, followed by cervical stenosis. Diagnosis is generally based on symptoms and medical imaging.

Treatment...

Outline of medicine

management of eye disease. Orthopaedics – branch of medicine that deals with conditions involving the musculoskeletal system. Otorhinolaryngology – branch of medicine

The following outline is provided as an overview of and topical guide to medicine:

Medicine – science of healing. It encompasses a variety of health care practices evolved to maintain health by the prevention and treatment of illness.

Space medicine

cause(s) of changes that NASA has noted mostly in long duration astronauts. NASA is also pushing the limits of ultrasound use regarding musculoskeletal problems

Space Medicine is a subspecialty of Emergency Medicine (Fellowship Training Pathway) which evolved from the Aerospace Medicine specialty. Space Medicine is dedicated to the prevention and treatment of medical conditions that would limit success in space operations. Space medicine focuses

specifically on prevention, acute care, emergency medicine, wilderness medicine, hyper/hypobaric medicine in order to provide medical care of astronauts and spaceflight participants. The spaceflight environment poses many unique stressors to the human body, including G forces, microgravity, unusual atmospheres such as low pressure or high carbon dioxide, and space radiation. Space medicine applies space physiology, preventive medicine, primary care, emergency medicine, acute care medicine, austere medicine...

Artificial intelligence in healthcare

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Artificial intelligence in healthcare is the application of artificial intelligence (AI) to analyze and understand complex medical and healthcare data. In some cases, it can exceed or augment human capabilities by providing better or faster ways to diagnose, treat, or prevent disease.

As the widespread use of artificial intelligence in healthcare is still relatively new, research is ongoing into its applications across various medical subdisciplines and related industries. AI programs are being applied to practices such as diagnostics, treatment protocol development, drug development, personalized medicine, and patient monitoring and care. Since radiographs are the most commonly performed imaging tests in radiology, the potential for AI to assist with triage and interpretation of radiographs...

Chiropractic

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Chiropractic () is a form of alternative medicine concerned with the diagnosis, treatment and prevention of mechanical disorders of the musculoskeletal system, especially of the spine. The main chiropractic treatment technique involves manual therapy but may also include exercises and health and lifestyle counseling. Most who seek chiropractic care do so for low back pain. Chiropractic is well established in the United States, Canada, and Australia, along with other manual-therapy professions such as osteopathy and physical therapy.

Many chiropractors (often known informally as chiro), especially those in the field's early history, have proposed that mechanical disorders affect general health, and that regular manipulation of the spine (spinal adjustment) improves general health. A chiropractor...