Introduction to Interventional Radiography and Angiography

MRT Program

Definitions and Indications

- Interventional radiography (IR) refers to radiological procedures that intervene in a disease process providing therapeutic outcome
- Categorized as vascular or avascular
- Angiography is a general term that describes the radiologic examination of vascular structures after introduction of an iodinated contrast media or gas.
- Arteriography or venography
- Exams more precisely names for vessel opacified and method of injection

Angiography

- Angiography primarily used to identify anatomy or pathologic process of blood vessels
- Chronic leg cramping leg pain after physical exertion (claudification) dr will order arteriogram of lower limbs to determine blood flow and presence of atherosclerosis
- A stenosis or occlusion commonly caused by atherosclerosis is indication to order an arteriogram
- Cerebral angiography performed to detect and verify existence and exact location of an intravascular lesion (aneurysm)

Angiography

- Some angiography procedures evaluate motion of the part
- Other vascular exams evaluate suspected tumours by opacifying the organ of concern
- After diagnosis is made, these lesions may be amendable to some intervention
- Interventional radiography assists the diagnosis of lesions and then used to treat these lesions thorough endovascular approach

Angiography

- Generally performed in angiographic suite under the direction of interventional radiologist using fluoroscopy
- Now performed in operating room to minimize risk of infection and allow rapid surgical management in case of complications
- IR team includes radiologist, MRTs, DI nurse (scrubs for procedures), operating room staff (cardiologist, anesthesiologist and OR nurses) DI clerks that schedule and enter patient information

Benefits to the Patient

- Minimally invasive with lower risk compared to surgery
- Less expensive than traditional surgeries
- Shorter hospital stays
- Shorter recovery times
- Alternative for those unable to undergo surgery

Attributes of IR Technologist

- Ability to work in high stress environment
- Adaptability
- Collaborative teamwork skills
- Group dynamic awareness
- Pride in imaging abilities
- Confident in their role on the healthcare team
- Knowledgeable of anatomy
- High level patient care

Responsibilities

- Operating imaging equipment
- Inventory management
- Image acquisition, assessment and manipulation to aid in interpretation, diagnosis and treatment
- Top patient care skills
- Safe application of ionizing radiation
- Accountable to avoiding self exposure and to other team members
- Understand blood work results and typical orders of procedures
- Continuing education

Patient Care

- Explain the process
- Written consent obtained after explanation
- Potential complications include vasovagal reaction, stroke, heart attack, death, infection, bleeding at puncture site, nerve, blood vessel to tissue damage and an allergic reaction to contrast
- Angio is only performed if it benefits the patient

Patient Preparation

- Usually restricted to clearer fluid intake and routine medications pre exam
- Adequate hydration from liquid intake ,ay minimize kidney damage caused by contrast
- Solid food restricted minimize risk of aspiration
- Contraindications to angio are determined by physician and include previous severe reaction to contrast , severely impaired renal function, impaired blood clotting, inability to undergo a surgical procedure or general anesthetic

Patient Care

- Conscious sedation may be used
- Let patient know about the sensations contrast may cause and noise produced by equipment and any movement
- Reduces anxiety and decreases risk of patient movement.

Room Preparation

- Should be scrupulously clean
- Fully prepared with every item needed
- Advance preparation vital in procedures that must be completed under aseptic conditions
- Must check the angio equipment and set control panel
- Restraining bands available for combative patients
- Adapt immobilization of head
- Ensure patient is correct

Room Preparation

- The sterile and non-sterile items required vary according to methods of injecting
- Should be a procedure reference book to ensure this
- Central sterile supply room have trays or packs
- Extra sterile supplies on hand in case of complication
- Life support and emergency equipment immediately available in the room

Radiation Protection

- Patient is protected by 2.5 mm of aluminum filtration, sharp restriction of beam of radiation to area of interest and avoidance of repeat exposures
- In angio each repeat necessitates repeated injection of contrast material
- Gonadal shielding used when possible
- Suites are designed to allow observation of patient at all times and provide adequate protection to staff using lead glass windows

Angiography in the Future

- Visceral and peripheral angiography is dynamic area
- New modalities that reduce or eliminate irradiation may be developed
- Some diagnostic information can be obtained only through conventional angio and will continue to be used.
- Less invasive procedures such as ultrasound, MRI, and CT angio exams are being utilized more often