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## RESEARCH ARTICLE

### GERIATRIC RADIOGRAPHY: SPECIAL CONSIDERATIONS IN DIFFERENT CIRCUMSTANCES

\*Vivodh Kushwaha

Assistant Professor, Radiography Department, Maharshi Markandeshwar University, Mullana,  
Ambala, India - 133207

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\*Corresponding Author:  
Vivodh Kushwaha

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#### ABSTRACT

The number of people over 65 years of age in India is predicted to reach 324 million by the year 2050. Currently, there are nearly 104 million elderlies in India. For radiographers, this signifies that in the near future majority of their patients will be more than 65 years of age or older. So, they must apprehend the ups and downs that occur as one grows older. The body undergoes physical and physiological changes as one ages and radiographer should be aware about them and act accordingly so as to prevent any harm to geriatric patients and achieve optimum images.

## INTRODUCTION

**Geriatrics:** The branch of medicine that deals with all aspects of aging, including pathological and social problems. The radiographer must be able to distinguish between typical ageing changes and issues caused by a disease process when an aged patient is brought to the radiographic imaging department. Major chronic illnesses, rather than acute illnesses, have a greater impact on the elderly. These illnesses cause a lot of bodily pain as well as a lot of social and psychological issues. When imaging a dementia patient, keep in mind that the person may not be able to understand or remember directions. The radiographer will have to explain what has to be done to the patient and then assist him or her in carrying out the instructions. Having a friend or family member present in the examination room to help the patient may feel more at ease, allowing the treatment to be completed more efficiently. It may be required to repeat instructions to a patient several times before assisting the patient in following them. The radiographer must assist the elderly patient in returning to the dressing room or lavatory after the examination is completed, because the stress of the procedure may create forgetfulness. Before leaving the patient, make sure he or she has been attended to. The elderly patient should not be left alone in the radiographic imaging room, since he or she may grow disoriented and fall off the examination table.

**CHANGES ASSOCIATED WITH AGING:** The following is a quick rundown of how the body systems change with natural ageing, as well as the precautions the radiographer must take as a result of these changes:

**Integumentary System:** Wrinkles appear on the skin, and it loosens. The vascularity of the dermis diminishes, and the patient's skin becomes whiter. The skin on the backs of the hands and forearms thins and becomes delicate. Blood leaks via weakening capillaries, causing skin to lose color. While moving the patient to and from the table and stretcher, the radiographer must ensure that the patient's skin is not damaged by rubbing or friction against rough surfaces such as immobilization devices, tabletops, image receptors, and uneven bedsheets.

**Head and neck:** There is a slight decrease of visual awareness, especially if you have presbyopia. The light-sensing threshold is lowered, and color perception and adaptation from light to dark are impaired. The ear undergoes sensory, neurological, and conductive changes. Hearing loss is a typical occurrence. In the neck, there is a reduction of muscle mass. A forward upper thoracic curve is present, which may result in kyphosis. Rapid lighting changes, such as going from a brightly lit waiting area to a darker examining room, can cause the elderly patient to become temporarily blind. Assist patients in order to prevent them from falling. The radiographer must ensure that the patient can hear directions and that the radiographer speaks loudly enough for the patient to comprehend what is being said. However, don't assume that everyone over the age of 65 has a hearing problem and needs to be talked to in an unusually loud voice; double-check.

**Pulmonary System:** Pulmonary function deteriorates as people age, with lung capacity decreasing due to hardening of the chest wall and other factors. Cough reflexes become less effective over time. The body's natural defense mechanisms against infection in the lungs deteriorate. The patient becomes more fatigued and out of breath. Because the cough reflex is less effective, the patient is more likely to

aspirate fluids when drinking. A patient with chronic pulmonary disease should not rest flat for more than a few minutes at a time since this causes dyspnea. When possible, advise the geriatric patient to hold his or her breath on the second full inhalation to ensure full lung expansion during the chest radiography evaluation. When administering contrast media for an upper gastrointestinal examination, the radiographer must encourage the patient to sip gently to avoid choking. To avoid aspiration, place the patient in an upright sitting position.

**Cardiovascular System:** As people age, their hearts undergo structural changes. Coronary arteries get calcified and lose their flexibility. The heart valve thickens as the aorta and its branches dilate and grow longer. The flow of blood through the coronary arteries is decreasing. The aorta and internal carotid arteries' baroreceptors become less sensitive to blood volume and pressure fluctuations. Because the older patient tires more easily, imaging examinations and treatments should be performed as quickly as possible to avoid fatigue. If an operation must be completed in a certain amount of time, the patient must be given breaks. For the reason of diminished circulation, hypothermia and complaints of feeling chilly are common concerns in the elderly patient; therefore, it is critical to minimize freezing. Raise the temperature of the room. After shifting from a prone to a standing posture, one-fourth of adults over 65 have postural hypotension for 1 to 2 minutes. Dizziness is caused by rapid position changes, and the patient may fall. Before standing and stepping off the radiographic table, the radiographer must always assist the elderly patient into a sitting position for a brief period of time.

**The Genitourinary system:** The tone of your muscles and the capacity of your bladder both diminish. Bladder contractions become more involuntary. The urine bladder capacity is lowered by 500 to 900 ml. In stressful settings, a loss of muscular tone in the female genitourinary system may make the patient more vulnerable to urine incontinence. Both the senior male and female patient's bladder capacity may be restricted, requiring them to urinate more frequently. For older individuals who find it difficult to use the restroom, keep a bedpan and urinal on hand.

**Musculoskeletal system:** Bone mass is lost, and bones become brittle. Muscle mass is lost. Muscle cells dwindle in number, and fibrous connective tissue takes their place. Muscle strength deteriorates over time. The spinal column shortens when the intervertebral discs thin and the vertebrae collapse. The lower back's typical lordotic curve flattens. Lower back flexion and extension are restricted. The position of the femur's neck and shaft changes. When a patient's muscular weakness worsens, it makes it more difficult for him or her to assume the positions required for imaging techniques. Discomfort is exacerbated by painful joints and deformities, as well as a diminished tolerance for movement. The radiographer must help the patient get into the proper posture and then use positioning sponges to help him or her stay in that position. When caring for older people, the risk of falling is higher. To avoid falls, it is the responsibility of the radiographer to assist patients in situating and getting on and off the radiography table.

**After Arthroplasty surgery:** Many elderly people's joints become extremely painful as a result of degenerative joint disease, necessitating an operational treatment to replace the diseased joint with a prosthesis. Arthroplasty is also recommended for those who have joint illnesses like rheumatoid arthritis or who have deformed joints as a result of an injury. Several days after arthroplasty surgery, radiographs are commonly asked to measure the rate of healing and the patient's capacity to return to regular activities. To avoid harm to the replacement joint, the patient's surgeon has placed restrictions on movement and positioning that must be followed after surgery. The radiographer must be aware of the needs of the patient who has had an arthroplasty in order to ensure that he or she is not injured while receiving radiographic imaging treatment. To avoid irreversible damage to the joint involved, the radiographer must understand and follow the restrictions on weight bearing and mobility for each

patient. Using a gurney, transport patients who have had hip, knee, or ankle arthroplasty to and from the department. They can't get on or off the radiography table without putting their weight on the injured limb. In this circumstance, move patients to their affected side. Do not allow the patient's affected leg to adduct after hip arthroplasty. To avoid this, place a pillow or a block between your legs.

**The Neurologic system:** In the absence of sickness, the ability to remember knowledge varies very little; yet, some short-term memory loss occurs. Sensorimotor function deteriorates with age. Both simple and complex stimuli reduce reaction time. The amount of time it takes to complete tasks grows. The pupil of the eye appears smaller as the lens of the eye thickens. Women experience a reduction in postural stability that is larger than men. Remember that the older patient is less sensitive to painful stimuli and may not be aware of a painful stimulus until it has caused an injury. The radiographer must be more conscious of the possibility of patient damage. In the dimly illuminated radiographic imaging rooms, the older patient may have vision issues. He or she may also require assistance in avoiding colliding with objects that are difficult to see. The patient, for example, may not be able to see the stool in order to know where to position his or her feet when stepping down from the radiography table. Information and directions are processed more slowly by the elderly. The radiographer must ensure that the patient understands the directions and give him more time to carry them out.

## CONCLUSION

Each senior patient must be assessed to discover if they have any particular needs. The imaging technician must be able to tell the difference between physical limitations caused by normal ageing and those caused by disease or abuse. Joint replacement surgery patients are given precise postoperative instructions. The radiographer is required to inquire about the patient's mobility and weight-bearing constraints. Patients who have had hip arthroplasty should not adduct the affected leg or flex the hip more than 90 degrees when sitting. Knee arthroplasty patients must not flex their affected joint more than 90 degrees. The value of honoring the patient's beliefs and values will improve, resulting in a favorable imaging procedure outcome.

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