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Produce single photon emission computed tomography (spect) and single photon emission computed tomography (spect/ct) images for diagnostic purposes

Overview

SFHCI.L SFHCI.L This standard is concerned with the use of Single Photon Emission Computed Tomography (for gamma rays only) and Single Photon Emission Computed Tomography (for both gamma and X-rays) equipment and procedures to produce images for diagnostic purposes. It includes selecting the most appropriate scan protocol depending on the individual's condition and clinical history. Key people are those involved in the individual's care and others involved in provision of services. Users of this standard will need to ensure that practice reflects up to date information and policies.

Performance criteria

You must be able to:

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1. apply standard precautions for infection control and other appropriate health and safety measures
2. ensure all necessary preparations have been made by the individual and staff before starting the procedure
3. check and prepare the equipment required for the examination
4. ensure the environment is conducive to maintaining the privacy and dignity of the individual
5. check the identification details before commencing the procedure in accordance with local policies and procedures
6. introduce yourself and other members of staff present during the examination
7. communicate with the individual / key people to facilitate their understanding of and co-operation with the examination
8. establish the individuals capacity to understand the procedure with the help of key people if necessary
9. obtain valid consent for the procedure in accordance with national and local guidelines
10. respect the individuals privacy, dignity, beliefs and decisions

11.
check individuals of child-bearing potential for pregnancy or possible pregnancy and breast feeding status, if appropriate to the examination, and take action in accordance with local protocols
12.
confirm the status of key people before the examination and, where their presence is required, adhering to local guidelines
13.
clearly explain the procedure and possible outcomes, including risk, benefits and limitations
14.
check for any contraindications for the proposed procedure and take appropriate action in response to identified risks
15.
prepare the site for intravenous access
16.
obtain intravenous access using cannulation
17.
administer radioisotopes using the appropriate equipment
18.
obtain blood samples for radiolabeling and reinject radioactive blood into the individual
19.
correctly place ECG stickers onto an individual in order to obtain a quality ECG trace
20.
enter the identification details of the individual into the SPECT and SPECT/CT scanners or, if details have previously been entered, check them for accuracy
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21.
accurately select all parameters required for the scan according to local scan protocols for the procedure, assess for any required modifications and take appropriate action
22.

position the individual and adjust their clothing according to the protocols for the examination to be performed in a manner which allows an optimal outcome to be achieved while:

22.1 recognising the individuals need to retain their dignity and selfrespect

22.2 ensuring their comfort as far as possible

22.3 preventing the appearance of artefacts

23.

check the room prior to making the exposure to ensure that only essential, protected persons remain with the individual, that all local protocols have been adhered to and take appropriate action if this does not occur

24.

commence the scan and monitor the individuals condition and compliance throughout the procedure and take action appropriate to their needs

25.

view the images on completion of the scan to ensure they are technically acceptable and suitable for diagnostic purposes

26.

create multi-planar reformats (MPR) from the relevant datasets as appropriate

27.

review images for clinical acceptability, take appropriate action, including further imaging if required

28.

monitor and record the individuals exposure to ionising radiation throughout the procedure according to local protocols

29.

observe the individuals condition and well-being at all times and take appropriate action

30.

following the preliminary imaging examination, inform the referring or reporting clinician if an abnormality is observed on the image which is likely to require further investigation or treatment

31.

provide the individual with information relating to the procedure and aftercare where necessary

32.

explain the process for obtaining results

33.

optimise, record, collate and prepare appropriate information, documentation and images for transfer or storage according to local protocols

34.

verify that the images have arrived/been stored according to local protocols

35.

recognise where help or advice is required and obtain this from

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appropriate sources

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Knowledge and understanding

You need to know and understand:

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1. legal, organisational and policy requirements relevant to your role, the role of others in your organisation and the activities being carried out.
2. the relevant national and local standards, guidelines, policies and procedures that are available and how and when they should be accessed.
3. the importance of respecting individuals culture, privacy, dignity, wishes, beliefs and decisions
4. the limitations of your own knowledge and experience and the importance of operating within your scope of practice
5. the roles and responsibilities of other team members
6. the importance of obtaining valid consent in line with national and local guidelines
7. clinical appropriateness of the examination request and the action to take when the request is not appropriate
8. the gross surface and cross-sectional anatomy of the areas to be scanned
9. the relevant physiology of the areas to be scanned
10.

the harmful effects of radiation to the human body and use of radiation protection equipment

11.

how to apply the principles of time, shielding and distance to reduce radiation exposure to staff

12.

the medical terminology relevant to the examination including abbreviations

13.

contra-indications to SPECT and SPECT/CT scanning including the clinical implications of any allergies, pregnancy status and breastfeeding status relevant to the examination

14.

the aseptic techniques involving in intravenous cannulation

15.

the care and preparation of intravenous access routes for dose administration

16.

the physiological uptake pathways and half-life for different SPECT radioisotopes and the impact upon optimal image quality

17.

the physical, biological and effective half-life of the radioisotopes used and consequently the radiation protection aftercare advice for individuals and key people

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18.

the calculation of administered radioactivity to an individual

19.

the calculation of residual radioactivity post injection of radioisotope

20.

the different energy levels of the radioisotopes employed and the subsequent choice of collimator to optimise image quality.

21.

the identification of an optimal ECG trace for gated SPECT and

SPECT/CT scans

22.

the process and technique for radiolabeling individuals blood cells

23.

the common normal variants and their appearance on SPECT and SPECT/CT images

24.

common pathologies of the areas to be scanned and their appearance on SPECT and SPECT/CT images

25.

manifestations of individuals physical and emotional status

26.

when additional images are required to aid diagnosis and to enhance the examination

27.

production, interactions and properties of x-rays and gamma rays.

28.

the physical processes involved in the production of SPECT and SPECT/CT images, scanning techniques and protocols

29.

the ways in which SPECT and SPECT/CT images can be captured, processed and permanently stored

30.

the physical principles of SPECT and SPECT/CT scanning

31.

alternative imaging examinations that may be employed alongside SPECT and SPECT/CT

32.

the technical and diagnostic quality requirements of the image

33.

artefacts on images - their causes and avoidance strategies

34.

factors which influence the decision to repeat images or take additional SPECT and SPECT/CT images

35.

the safe operation of the SPECT and SPECT/CT scanners and accessories in their use

36.

the use of quality assurance equipment, recording results and taking appropriate action

37.

equipment capabilities, limitations and routine maintenance including the quality control processes required by the operator

38.

the importance of timely equipment fault recognition and local procedures for reporting these

39.

how to adapt communication styles, ask questions, and listen carefully in ways which are appropriate to the needs of the SFHCI.L

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individual

40.

methods of communicating difficult and complex information to individuals and key people

41.

the importance of providing individuals and key people with opportunities to ask questions and increase their understanding

42.

the importance of respecting individuals culture, privacy, dignity, wishes, beliefs and decisions

43.

the information that should be given to individuals before, during and on completion of the examination

44.

preparation of the environment, individual and equipment for SPECT and SPECT/CT scanning

45.

procedures relating to recording, collating and preparing appropriate information, documentation and images for transfer or

storage according to local protocols

46.

how to keep full, accurate and clear records in line with organisational procedures

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External Links