Discussion of basic questions and standards in daily practice and aspects of risk management

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Objectives

1. Identify the strength and weakness of current methods used in daily practice
2. Increase awareness of potential pitfalls caused by acquisition procedures and technical issues
3. Adopt knowledge and techniques to provide state-of-the art service and risk management
4. Identify and use guidelines relevant for general procedures in nuclear medicine incl. the use of PET/CT and SPECT/CT systems

Summary

This CTE session is an interactive session where basic technical questions and standards in daily practice as well as risk management will be discussed by means of case presentations followed by questions. Topics will include:

Basic questions of quality control concerning conventional nuclear medicine procedures as well as questions concerning hybrid techniques such as PET/CT and SPECT/CT will be discussed in this session.

Regarding quality control of gamma cameras the following topics will be addressed: importance of correct window settings, performance of a correct intrinsic flood calibration and an intrinsic and extrinsic quality control. Examples demonstrating the results of incorrect flood calibration and the use of incorrect window settings will be shown. In addition multiplier malfunctions which occurred during quality control will be pointed out.

Examples will be presented to illustrate potential pitfalls and common sources of error from various scans from the clinical routine including bone scans, myocardial perfusion scintigraphy etc.

Furthermore important aspects of risk management will be addressed. This will encompass issues of radiation safety and patient dosimetry concerning application of radio nuclides. Moreover different strategies to reduce patient dose will be presented. Additionally we will also focus on reducing radiation burden from external radiation sources used in SPECT/CT and PET/CT. But not only reduction of patient dose is important in daily clinical practice but also the minimization of radiation exposure of personnel involved in direct patient care. Hereby various questions regarding the average expected dose to staff depending on patient throughput and applied procedures will be addressed and most important ways to minimize radiation burden will be explained. In this context also basic questions of radio protection are of importance and will be part of the session.

The rising use of hybrid PET/CT scanners and the increasing number of diagnostic CT scans performed in nuclear medicine departments also result in increasing use of iodine contrast agents. Therefore risk management concerning allergic reactions and potential nephrotoxicity will be discussed. Moreover aspects concerning image quality of fused PET/CT images using CT for attenuation correction and the use of i.v. and oral contrast agent will be addressed as well. Many aspects formerly more important for the radiological CT community are now also of paramount importance for the nuclear medicine technician. This includes adaption of radiation exposure according to patient habitus and deciding on the right CT protocol in coordination with the nuclear medicine physician. Therefore aspects concerning timing of contrast agent bolus for arterial, portal venous and if necessary delayed contrast enhancement phases are part of this session as well. Also indications for performing different phases of contrast enhancement especially concerning the diagnosis of liver lesions are of importance in this respect.

All questions will be answered interactively by the audience and the answers will be explained and discussed by the moderators, speakers and the audience. By increasing the awareness of potential pitfalls this CTE seeks to improve acquisition procedures and quality management.
References
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