CTE 6 (Technologists) - Interactive
Tuesday, October 16, 16:30-18:00

Session Title
Renal Imaging

Chairpersons
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Programme

16:30 - 17:00	Marcel Janssen (Nijmegen): Renal Imaging in the Transplanted Patient
17:00 - 17:30	Ana Isabel Santos (Almada): Renal Imaging in Paediatrics
17:30 - 18:00	Marlene Hekman (Nijmegen): Detection of Renal Tumours by Using SPECT and Fluorescent Imaging

Educational Objectives

1. Describe briefly the anatomy and physiology of the renal system and overview the most common pathologies
2. Update the clinical indications for performing renal isotopic imaging
3. Describe in detail the imaging involved for patients with a renal transplant, mentioning the imaging parameters involved and describe in detail the importance of SPECT/CT as an addition to conventional imaging
4. Describe the most used tracers in renal imaging, for paediatric population
5. Mention the most common imaging procedures available in clinical practice to diagnose/follow-up paediatric pathologies and give examples of good practice protocols
6. Discuss artefacts and pitfalls in renal imaging of paediatric population
7. Discuss dosimetric concerns in paediatric population
8. Briefly describe how renal carcinoma develops and which surrounding organs are involved
9. Describe what surgical methods are available to resect renal tumors and the challenges faced when resecting renal tumors
10. Mention briefly the research involved and any give an update in animal studies that have been recently performed
11. Describe in detail the advantages of radio-guided surgery and the addition of fluorescent imaging
12. Highlight the imaging parameters involved for the patient undergoing the above procedure
13. Describe any complications involved, patient prognosis and the patient management after the surgery

Summary

Renal imaging based on the use of radiopharmaceuticals provide important functional data that have already proved to be useful in clinical practice. There are several pathologies that can be assessed recurring to the use of radiopharmaceuticals like ^{99m}Tc-MAG3, ^{99m}Tc-DTPA, ^{99m}Tc-EC, ^{99m}Tc-DMSA and others. These radiopharmaceuticals use different biological pathways and enable the study of different functional events.

The imaging protocols have been developed along the years and their constant optimization has led to the achievement of best practice protocols.

From the several pathologies that can be studied by the use of the named radiopharmaceuticals, the kidney transplantation is a condition that require specific protocol, which can detail the important features of this kind of surgery and it's several complications. The selected radiopharmaceutical, the injected activity, the images acquired and their details, etc, should be carefully selected. These details will be discussed during this session.

It belongs already to common-sense that the paediatric population has significative differences from adults and cannot be treated has small adults. In this sense, and due to the incidence of genito-urinary pathology in this population it is, in fact, important that these differences are addressed and carefully discussed. The adequation of the administered activity is one of the numerous specificities of this population. There are several challenges that have to be faced while imaging paediatric patients, in order to achieve a good quality exam that allow the physician to trust the results and interpret them, considering the age of the patient.

There are several types of images that are used in renal imaging context, mostly dynamic, static and SPECT. This last has been gaining preponderance in the nuclear medicine community. Advantages like spatial resolution are considered relevant and helpful to support diagnoses. The co-registration of SPECT and CT image add anatomic detail to the functional information, enhancing the quality of the answer given to the clinical suspicion.

When imaging renal cell carcinoma, using a multimodality approach of SPECT ad fluorescence imaging combined, is a promising strategy to improve the accuracy of the treatment.

Since the renal imaging studies have been used for so long in the nuclear medicine field, an update and the opportunity to discuss and visualize real-case studies is considered to be important to provide the scientific community with the state of the art of renal imaging.

Key Words

Renal Imaging, Renal scintigraphy, Fluorescent Imaging, Paediatric renal Imaging, Multi-modality imaging, Renal cell carcinoma imaging

Take Home Message

Renal Imaging procedures in Nuclear Medicine have proved its importance in clinical practice along the years. Anyhow, the update of the established protocols and also the continuing investigation are enabling the evolution of these techniques, being multi-modality imaging a promising approach.