

Specialist training in Nuclear Medicine and future perspectives

Ausbildung in Nuklearmedizin und Zukunftsperspektiven

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We read with the greatest interest the editorial by Carrio et al [1] and would like to express our full support for the idea of strengthening Nuclear Medicine as a clinical specialty. With the introduction and the emerging application of molecular imaging by PET/CT and increasing development and application of different radionuclides in the treatment of various oncological entities, Nuclear Medicine has become an indispensable part of oncological management in many tumor patients [2]. The radionuclide therapy of neuroendocrine tumors, bone metastases, recurrent disease in thyroid cancer, and prostate cancer are some examples of established theranostics in our specialty. This requires, however, thorough basic knowledge of various tumors and of other oncological therapy modalities, as well as risk assessment and management of possible side effects.

Prostate cancer is the third most common cancer in the USA [3]. Later on this year 2021, we are eagerly looking forward for the publication of the phase 3 VISION trial [4]. Patients with metastatic prostate cancer with PSMA positive scans were randomized in a 2:1 ratio to receive either ^{177}Lu -PSMA-617 plus best supportive/best standard of care or to receive best supportive/best standard of care only. Primary end points of this study are overall survival and progression free survival based on radiology results. In case of a positive outcome this will tremendously boost therapy numbers in nuclear medicine centers and will require additional well trained nuclear medicine physicians and nuclear medicine technicians in the near future.

Recent studies have reported the potential involvement of nuclear medicine in the management of patients affected by COVID-19 [5, 6]. On the other side, the COVID-19 pandemic also affected medical staff in some clinical departments in Europe. Therefore, we decided to provide assistance to other departments in our hospital with our staff (S.M.). The young residents and young specialists perform night guard in the pulmonary disease

department and in the emergency department. Assistance in the oncology department will also be considered in the future. The physicians from Nuclear Medicine are assigned as residents and can contact senior physicians in the department in case of any uncertainties. This fruitful collaboration will also continue in the future.

With this kind of cooperation, clinical needs for probably less common nuclear medicine investigations can also be identified earlier and appropriate adaptations, especially local ones, can be made. In the past, we have continued to offer investigations in our portfolio, which were no longer relevant in clinical routine use, such as radionuclide ventriculography; on the other hand, we have lost investigations in some centers, that could be used even longer, such as renal $^{99\text{m}}\text{Tc}$ -DMSA scan or quantitative lymphography of the extremities, or therapy of bone metastases with ^{153}Sm . These regional losses were in part due to a lack of knowledge among clinical partners regarding the potential of nuclear medicine service. In addition, it should be noted that we hardly appear in the curriculum of medical studies for practical training of medical students in many countries. Therefore, neither students nor even young physicians have the opportunity to come into practical contact with nuclear medicine during their studies or in clinical practice, leading to an underuse of valid and clinically useful nuclear medicine procedures.

In some countries, nuclear medicine departments no longer provide outpatient care for patients with thyroid diseases, which are now managed by endocrinologists. Moreover, the recently introduced oncological therapies, like Radium-223 [7] or ^{177}Lu -DOTATOC [8] therapies are carried out in some centers by radiation therapists. These developments are partly due to the fact that available human resources in nuclear medicine departments have been committed in recent years mainly to PET-CT diagnostics, where there has been a huge increase in demand.

In view of constant developments especially in the field of nuclear oncology [9], it continues to be crucial that nuclear medicine trainees and specialists are well-trained and instructed in routine clinical procedures in a timely manner. To the very best of our knowledge, curricula of nuclear medicine training regulations in most EU countries do not include mandatory in-depth oncology training [9]. Nevertheless, it must be insured that the flow of information from Nuclear Medicine to clinical disciplines is well-established and carried out locally in a consistent manner. The UEMS European Training Requirements for the specialty of nuclear medicine state that “Training in other specialties is required during NM training, for example oncology (medical and radiation), cardiology, endocrinology, neurology” [9]. Through internal cooperation in the clinical environment, it is possible to foster this fruitful exchange in a timely manner.

Therefore, close collaboration with clinical partners, not limited to clinical meetings such as tumor boards, would be beneficial for the keeping and strengthening Nuclear Medicine as a clinical specialty. Furthermore, the European Training Requirements for the specialty of nuclear medicine [9] need to be adapted in the near future with regard to clinical experience and continuing practical development (CPD). [10].

Conflict of Interest

The authors declare that they have no conflict of interest.

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