MEDICAL PHYSICS EDUCATION AND TRAINING IN TUNISIA

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Abstract — **Radiotherapy was introduced with the opening of the first cancer center (Institute Salah Azaiez of Tunis) in 1969. The radiotherapy department was directed by the radiotherapist Pr. Ahmed GHIRAB supported by French co-workers; At the time the service is composed of three units namely: external radiotherapy (Co60 and conventional radiotherapy:100-400 kV), low dose rate brachytherapy gynecological used Cs 137, Radium and in 1972 the introduction of Ir192 by Pr. Raouf Ben ATTIA and medical physics led by Mr. Hédi DAMMAK. With the installation in 1992 of the first high-energy accelerator and the expansion of the staff (6 radiotherapists and 2 medical physicists), we thought about the academic education and training of medical physicists then in 2007-2008 a professional master of radio physics was established to train 9 medical physicists and in 2012 we opted for the PhD of medical physics which Pr Mounir BESBES was the coordinator to remedy the lack of medical physicists in the country especially that with the opening of many regional public and private radiotherapy centers.**

Keywords: **Tunisia, radiotherapy, medical physics, education and clinical training.**

I. Introduction

In Tunisia, We are witnessing a rapid increase of new cases of cancer per year, it is estimated to 15000 new cases cancer, so it's a real public health problem. We need to multiply cancer centers, medical and paramedical staff. Since 1992, there has been a rapid increase in the number of the new anticancer centers equipped by modern equipment of irradiation using new techniques (CRT, IMRT, VMAT) and medical imaging (EPID, IGRT) With the technological developments of radiation treatment and imaging equipment, the need for medical physics has increased in recent years to achieve the required objectives and to ensure the quality irradiation treatment, the protection of patients, staff and the public as well as to maintain the level of performance of equipment used in Tunisia.

II. Infrastructure

Tunisia has 5 public radiotherapy centers and 7 private centers equipped with 13 high energy accelerators and 8 coblat therapy devices and 6 dedicated simulation scanners and two brachytherapy units.

In addition, Tunisia has a large number of medical imaging equipment throughout the national territory in both the public and private sectors.

Table 2Medical equipment's for medical imaging and radiation therapy

Equipment	Total
SPECT/CT	3
Gamma camera	7
PET/CT	4
Co-60 EBRT	8
Ir192 HDR BT	1
Accelerator	13
MRI	++++
CT	++++
Mammography	++++
Standard Radiology	++++
Interventional	++

III. Regulation of medical physics

In view of the Tunisia regulations on radiation protection, the presence of medical physicists (radiation physicists) is mandatory in the radiotherapy departments on protective measures against ionizing radiation). In particular, in each radiotherapy department, the presence of at least one qualified medical physicist, who is competent in the subject concerned, is required on a full-time basis.

Table 2Distribution of medical physicists in Tunisia

Medical Physicists	Total
Radiotherapy	31
Nuclear Medicine	0
Radiology	0
Students	5
Total	36

IV. Education and training

In Tunisia, the education and clinical training of medical physics began in 2007 as part of the Master in radiophysics, The clinical training in Medical Physics was launched by the radiotherapy departments of Salah Azaiez institute and Habib Bourguiba hospital of Sfax following the Master program in Medical Physics. The Master program includes one and half years of academic training in medical physics and a period of 6 months of clinical training and dissertation preparation.

Since 1990, some technical cooperation projects and RAF projects was launched with the International Atomic Energy Agency (IAEA) on Strengthening Capacities in Medical Physics. Project in which, the program benefited from the contribution of international expertise in the field of training in medical physics. Since 1990, IAEA project have contributed to improve radiotherapy and medical physics in Tunisia with seven cooperation projects.

V. Conclusion

In Tunisia with the launch of a new cancer treatment center and the introduction of new treatment techniques we need to Increase in the number of qualified medical physicists operating at the level of hospital structures using radiation as well as the strengthening of training capacities in the field of medical physics. Reorganization of medical physics education and training programs and introduction of a regulated and clinical training program

- Harmonized clinical training program to comply with international requirements
- Strengthening of national regulations in this area.
- The introduction of a continuous professional development scheme for the discipline
- The establishment of an accreditation and registering mechanism for the exercise of the profession of medical physicist

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