

HISTORY OF CONTEMPORARY MEDICINE IN IRAN

ENDOCRINOLOGY AND METABOLISM IN THE ISLAMIC REPUBLIC OF IRAN

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Introduction

Development of the present understanding of endocrine system closely parallels the evolution of clinical sciences from prehistoric times to the present. Iranian physicians during the glorious Islamic civilization had a tremendous share in the progress of medical sciences. The excellent clinical observations and physical examinations and writings of Iranian scientists such as Rhazes (Al-Razi, 865-925 AD), Haly Abbas (Ali ibn-al Abbas-al Majusi, died 994 AD), Avicenna (Abou Ali Sina, 980 – 1037) and Jurjan (Osmail ibn al-Husayn al-Jurjani, 110 AD) influenced the fields of internal medicine including clinical endocrinology. Avicenna in the “Canon” (al-Quanun) and Jurjani in “the treasure of Kharazm-Shah” have offered a precise description of diabetes mellitus and association of the exophthalmos with goiter, respectively; a few decades before Johann Peter Frank, Calb Pary, and Robert Graves described their observations.¹ The new era of medicine in Iran begins with establishment of Dar-ul-funoon in 1849, which was the only center for modern medical education before the institution of Tehran University. In 1925, there were only 253 general practitioners who were trained in Dar-ul-Funoon college of medicine and 652 Hakims who had gained experience of medicine, and were practicing throughout the country.² Following the establishment of the Tehran university school of medicine in 1938 and the return of Iranian graduates from the medical schools in Europe, much progress was made in the development and availability of trained manpower and specialized faculties in medicine.³

In the first half of the 20th century, there was no sub-specialization of internal medicine in Iran. From 1950 to 1970, a few sub-specialists returned from Europe and USA and some internists showed interest in sub-specialization, by focusing on special patients, in the famous internal medicine ward 1 of Dr. Sadegh Pirooz Azizi in the former Pahlavi Hospital (now called Imam Khomeini Hospital) where all of the rooms were assigned to sub-specialty patients and one to endocrinology and metabolism. First textbooks, mostly translations, appeared in endocrine physiology and clinical endocrinology by Dr. Nematollahi and Dr. Dowlatabadi. Few internists with interest in endocrinology and metabolism and sub-specialists in endocrinology were in charge of the education of this division of internal medicine in the medical schools of Tehran, Mashhad, or Shiraz universities, while they were mostly practicing endocrinology in their private offices on a part-time basis. The establishment of sub-specialty training in endocrinology and metabolism in 1985 was the major step in the advancement and progress of this sub-specialty, which will be dealt with in depth in this paper.⁴

Screening and diagnosis

Until 1940, the diagnosis of endocrine diseases was made only on the basis of clinical findings. From 1940 to 1980, few endocrine tests were set up, mainly in university hospitals. The Institute of Nutrition conducted population screening for goiter once in the 1940's.⁵ The establishment of the Institute of Endocrinology in the Ministry of Health and the extension of endocrine laboratories in Tehran and Shiraz universities helped physicians to use better tools for the diagnosis of endocrine patients. The growth of sub-specialty training in late 80's and 90's was accompanied by increase in quality and quantity of endocrine

tests. The establishment of endocrine research centers facilitated many of the new tools needed for screening and diagnosis of endocrine diseases, in particular, goiter and iodine deficiency disorders,^{6, 7} diabetes,^{8, 9} hyperlipidemia,^{10, 11} neonatal hypothyroidism,¹² osteoporosis, and metabolic bone disease.^{13, 14} At present the major problem lies in the precision and quality of diagnostic kits purchased from other countries and the acute shortage of some of the diagnostic kits and substances required for endocrine suppression and stimulation tests.

Management and care facilities

After the former Pahlavi Hospital in Tehran in the 40's, gradually other medical centers began to provide special management care for endocrine patients. These include: Nemazi Hospital in Shiraz, Shariati, Valiasr, Shohada-e-Tajrish, Taleghani and Firoozgar Hospitals and the Institute of Endocrinology in Tehran, the Ghaem and Imam Reza Hospitals in Mashhad and the Golestan Hospital in Ahwaz.

In 1962, Dr. R. Barakat, established an 8-bed endocrinology and metabolic ward along with thyroid function test and thyroid scan and in 1970, Dr. GH. Amirhakimi established the pediatric endocrinology section, both at the Nemazi Hospital of Shiraz University. Since 1980, the Nemazi Hospital Endocrinology Research Unit and Clinic, under the direction of Dr. G. Omrani, has provided clinical services.

In 1976, two independent endocrine wards were established at Tehran University, one at Dariush-e-Kabeer Medical School (now called Dr. Shariati Hospital) and the other at Vali-e-Asr Hospital Complex of the Imam Khomeini Hospital. The aforementioned endocrinology wards were run, at the time, under the leadership of Dr. V. Fatoorechi and Dr. A. Safa. Residents of the internal medicine department used to spend the 3-month training at these endocrine wards on a rotational basis. Starting in 1977, this rotation was extended to 12 – 18 months in endocrinology training. Drs. Bastanhaq and Nakhjavani successfully completed this training and continued to run these two wards after their mentors left the country.

In Mashhad, the late Dr. A. Motamedi began endocrine care and education in the 1970's and was joined by Dr. R. Rajabian in 1978 and Dr. Khazai in 1979 who developed a well organized education system, and care for endocrine patients in the North-East of Iran.

In the late 60's and 70's, Dr. H. Gharib, Dr. M. Mellati, and Drs. Sami, Sam and Askari provided extended services for the management and care of endocrine patients in the hospitals of Ministry of Health.

In 1979, a new field of care and training was begun in the Taleghani Hospital of Beheshti University with the leadership of Dr. F. Azizi. This developed into the endocrine subspecialty training in 1985 and endocrine ward in 1990. In 1990, with the graduation of sub-specialists in Iran, management of endocrine patients developed in major hospitals of all the provinces. At present, save for 3 provinces, all have at least one endocrinologist and at least one medical center for endocrine care. The standard of care for endocrine patients has improved tremendously. At least 50 centers and hospitals throughout the country offer special diagnostic and treatment care for endocrine patients. In fact, as things stand, there is no need for referral of endocrine patients to centers outside of Iran.

The subspecialty program of endocrinology and metabolism

Established in 1985, six years following the Islamic Revolution, the sub-specialty program in endocrinology and metabolism, is today one of the most successful programs. Being the first of its kind in the Iran, todate, 70 sub-specialists have graduated and 18 fellows are presently active in this program. The training has successfully supplied faculty staff in endocrinology and metabolism to 24 universities of medical sciences throughout the Iran. The number of sub-specialists in endocrinology in Iran has grown from 14 to 84 in the last 10 years.

History

Dr. Fereidoun Azizi, chairman of the department of endocrinology and metabolism at Shaheed Beheshti University, Taleghani Hospital has a major role in organizing the subspecialty-training program in endocrinology in the Islamic Republic of Iran. Initiating this subspecialty program in 1985, he later on developed a joint fellowship program, which included rotation of fellows in various endocrine wards and clinics of 3 medical schools (Shaheed Beheshti, Iran and Tehran Universities of Medical Sciences) for 18 months and research activities for 6 months. Sub-specialty training programs in endocrinology and

metabolism, in addition to Tehran and Shiraz, was subsequently established in Mashhad and Isfahan Medical schools in 1991 and 2001, respectively.¹⁵

Objective

The aim of this subspecialty program is the training of sub-specialists in the field of endocrinology and metabolism in areas of education, research, and patient management in accordance with the needs of the Iran.

Definition of the program

Training of sub-specialists in endocrinology and metabolism is defined as training of board-certified internists, and providing them with the competency and expertise required in clinical and laboratory diagnosis and management of endocrine disorders. The fellowship program in endocrinology and metabolism can be completed in 24 months. Fellowship begins on October 10th (Mehr the 1st) of each year.

Clinical training program

The subspecialty program in endocrinology and metabolism offers the trainee an opportunity to care for a large number of patients with diverse endocrine pathology. The program includes: 1. Clinical training obtained under the supervision of faculty members. Fellows should assume direct responsibility in diagnosis and management of hospitalized patients with endocrine disorders and those attending endocrine clinics. 2. Rotation to pediatric endocrinology. 3. Design and implementation of at least one research study. 4. Lectures, seminars, and workshops in the areas of: a) principles of laboratory tests hormone studies b) endocrine imaging c) genetics d) immunology e) principles of nutrition f) biostatistics g) research methodology. 5. All endocrinology fellows are required to attend endocrine laboratory (hormone, pathology, cytology) for at least 50 hours during their clinical training to become familiar with the principles of laboratory evaluations in endocrinology. 6. All endocrinology fellows are required to attend the nuclear medicine department for at least 50 hours during their clinical training to become familiar with principles of the use of radioisotopes in diagnosis and treatment.

Research opportunities

Much of the second year of the program is spent in research training. Trainees will take part in laboratory or clinical research. The investigations are performed under supervision of one or more faculty members. Clinical research studies can be designed and implemented in the fields of diabetes and its complications, lipids, thyroid disorders, metabolic bone diseases, pituitary, adrenal and parathyroid disorders, reproductive endocrinology, and endocrine neoplasia. Epidemiologic investigations can also be carried out on endocrine-related problems. Research studies are performed in individual hospitals and in the affiliated endocrine research centers. As a trainee advances, the development of independent ideas and the art of designing proposals and writing grants are emphasized so that upon completion of the training program, the individual is capable of pursuing an independent academic career.

Required resources and facilities for an approved subspecialty program are as follows.

1) Presence of at least three full-time faculty members with subspecialty in endocrinology and metabolism. 2) Presence of an internal medicine specialty program in the proposed medical center. 3) Outpatient clinics for endocrinology and metabolism, held at least twice weekly. 4) Availability of at least ten hospital beds for endocrine inpatients. 5) Presence of an endocrinology laboratory. 6) Updated and resourceful library containing the latest endocrinology textbooks and journals.

Fellowship opportunities

At present, the number of admissions for fellowship training programs in endocrinology are: Shaheed Beheshti 3, Tehran 3, Shiraz 1, Mashhad 1 and Isfahan 1 admissions each year. The total number of admissions includes 9 fellows in endocrinology each year. The distribution of endocrine sub-specialists graduated from sub-speciality programs in the Iran, is subject to the respective university appointments. Only two of the graduates are presently out of the country. The 25 sub-specialists working at Tehran-based universities are distributed as follows: 6 at Shaheed Beheshti, 7 at Tehran, 7 at Iran, 2 at Baghyatolla, 2 at Azad, and 1 at the Military Universities of Medical Sciences.

Research

Although some research papers were published in the past,^{16, 17} the research in endocrinology has grown very fast in the last two decades. Endocrinologists have had one of the highest numbers of abstracts and papers amongst clinical scientists in the last 15 years. Research projects in goiter and iodine have demonstrated the extent and severity of the problem,^{6, 12 – 14, 18 – 23} and have helped the establishment of control programs and their monitoring.^{7, 24} This has placed Iran at the top position in the region and the world for consultation and collaboration in IDD.^{25, 26} Progress in research in other conditions of thyroid derangement,^{27 – 31} diabetes,^{32 – 34} hyperlipidemia,^{35, 36} osteoporosis and metabolic bone disease,³⁷ and other endocrine disorders,^{38 – 43} some of which have been performed for the first time in the world,^{44, 45} while holding regular local, national and international seminars and congresses have been instrumental in the increase of knowledge and improvement of attitude and practice of physicians, policy-makers and planners in regard to health problems in endocrinology. The establishment of 4 endocrine research centers (more than in any other specialty) has assured the sustainability of progress in research in this sub-specialty.

Comments

History has repeatedly acknowledged the contributions of Iranian scientist to mankind. The advent of Islam and its teachings underscored the vitality of knowledge to progress and fostered advances in various fields of sciences. The progress was made possible by the incentive to learn and achieve, a rich culture, availability of libraries with references of Islamic medicine, the integration of various schools of thought, and development of medicine-related literature and Islamic beliefs motivating physicians and their thirst for knowledge. In the renaissance of science in Iran, which followed the great Islamic Revolution in 1979, the science of endocrinology progressed to incredible levels, with manpower training and education, increase in the number of medical facilities and hospitals, marked improvement in medical care and management of patients, and progress in epidemiological, clinical and basic endocrine research. All these have helped raise the ranking of Iranian endocrinology, and its worldwide recognition is reflected by the number of publications and presentations in international forums and requests for consultation in international councils.

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