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## History of Contemporary Medicine in Iran

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### A HISTORICAL REVIEW OF THE DEVELOPMENT OF PATHOLOGY IN IRAN

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**P**athology as a science of discovering the reasons for an illness has attracted the attention of physicians since the time of antiquity. The Egyptian Edwin Smith Papyrus (1700BC), the oldest known medical document, contains references to mechanisms and causes of various diseases including tumors of the breast, wound healing, and infection.<sup>1</sup> Despite this long-standing interest, significant progress in our understanding of the science of pathology has come only in the last quarter of the second millennium, in which anatomic explorations have become available and have featured the gross appearance of organs. Later, morbid anatomy facilitated recognition of the macroscopic characteristic of diseased organ and tissue, enabling pathology to become a new tool for the recognition and interpretation of diseases. Subsequently, during the last quarter of the nineteenth century, morbid histology became known to physicians, including Rudolf Virchow who was inspired to formulate the cellular theory of diseases, pathology, as a clinical science, has become a powerful skeleton for the diagnosis and management of diseases.

#### Pathology in Iran

Despite the great expansion and better understanding of medical sciences in Iran, particularly during the Islamic period, we know very little of the approach to pathology in this period. There is good evidence of gross descriptions of diseases such as cirrhosis of the liver, pulmonary tuberculosis, pleural effusion, and others in the famous Iranian medical texts such as

“Kanon” of Ibn-Sina and “Almasoodi” of Razi.

However, there are no data available as to how these early scientists obtained this knowledge as dissection of the human dead body was prohibited during that period. It is believed that this degree of knowledge is obtainable only through physical examination, surgery, or postmortem observations.

#### Darolfonoon and Madreseh-Teb

With the establishment of a modern-type institute for higher education called “Darolfonoon” (Institute of Polytechnic) in Tehran in 1850, western-type medical instruction started in Iran.<sup>2</sup> This institute had several schools, including one in medical sciences, which started in 1851 with 30 upper-class students including princes and Ghajar relatives. For each school there were one or several invited professors from European countries, mostly Austrians. Several European-trained Iranians joined the invited foreign group and were employed as assistant teachers (Khalifeh) or translator/interpreters. According to a royal decree, each invited teacher in all subjects should have a textbook in the Persian language, so that the Iranian students could read and understand the subject in their mother language. Additionally, it was required that all students learn French, as this was included and emphasized in the students’ programs. Among these invited physicians, several names including Polack, Focchette, and Schlimmer had great influence on the developing medical school. Dr. Edward Jacob Polack, an Austrian surgeon, was in charge of the medical school and started his work in 1851. His assistant and translator were Mohammad-Hasan-Khan Ghajar, and Mirza-Hosseini-Khan Afshar. These teachers translated and wrote several books on anatomy, physiology, pathology, surgery, and medicine. These books were written by hand, and the students had to copy the books themselves. We

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have a handwritten book on pathology in Farsi dated 1293 HG 1876.

Dr. Polack learned Farsi himself and in his later life he spoke Farsi and taught in Persian language. Similarly Dr. John Schlimmer, in addition to his medical services, wrote a book on medical terminology. This book incorporates medical terminology in Persian, German, and French. Many new examples of Persian terminology were adopted by these writers. Dr. Focchette, in 1857, established the first laboratories in chemistry, biochemistry, and analytical chemistry in Iran. One of Focchette's students, Mirza-Kazem Mahallati (Chimi), and his son Dr. Mahmood Chimi, and later, Dr. G. Howakemian and Dr. A. Vartany of Tehran Medical and Pharmacy Schools, continued Focchette's work. Although anatomic pathology was part of the teaching program, it was taught in theory without a practical course or demonstration. The first documented autopsy was performed by Dr. Polack in 1854 on a European whose death was suspicious and the tissue specimens were sent to Europe.<sup>2-4</sup>

#### **Independence of Madreseh-Teb (school of medicine)**

In 1880 the division of medicine separated from Darolfonoon and moved to another building (Masoodieh building). Dr. Loghmanoddoleh Adham was appointed as dean, but no pathologist present in the team of teachers.

After the separation of "Madreseh-Teb" from Darolfonoon, pathology was still taught in theory with no slide presentations, gross or microscopic examinations, or medical laboratory. The teachers used handwritten books or copies of previous textbooks. Extant are reports of tissue examination from the American Hospital, the British Oil Company Hospital, or from employees of foreign embassies which were sent abroad. Tissue examination facilities were not available for ordinary Iranian patients.

#### **Mostafa Habibi era<sup>2,5,6</sup>**

The first medicine laboratory, including anatomical pathology, was established in 1936 in Tehran. Iranian National Health Office established a medical and health clinic on Naserieh Street, near Darolfonoon. The medical laboratory was part of this clinic. This laboratory, they called the "central laboratory", had several doctors and was headed by Dr. Mostafa Habibi-Golpayegani. Dr. Habibi was among the students who were sent to France in

1927 to be trained for future work in higher education in Iran. Dr. Habibi became a medical doctor and got his special training in pathology in Paris. He came back to Iran in 1936 and started as pathologist in charge of the Pasteur Institute of Iran. In the central laboratory, several doctors were employed including Dr. Mashoof, Dr. H. Mirdamadi (serology), Dr. H. Sohrab, Dr. Zor-Ryasatein (bacteriology), Dr. A. Sheibani, Dr. N. Ansari (parasitology), Dr. G. Howakemian, and Dr. Mahmoodzadeh (chemistry). Specimens from various hospitals were sent to this laboratory expert opinion.

Up to this time, there was no hospital related to the medical school. Hospitals were either municipally-affiliated or privately operated. Medical students attended these hospitals with no direct supervision from the medical school. Pathology, together with histology and embryology, were taught in a small room at Dr. Motamed Hospital where the only Iranian "Madreseh-Teb" was located. Dr. Ali Falati, another French-trained physician, chaired these sections and Dr. Habibi was in charge of teaching pathology. He started to demonstrate microscopic slides to the students. Twenty-five to thirty microscopic slides, prepared in his home or the central laboratory, were used for teaching.

From the time of starting the central laboratory, Dr. Habibi prepared microscopic slides to show to the physicians and surgeons in the Medical Association Club which was founded and operated by Dr. Habib Adle. Dr. Habibi used to take his own microscope to the meeting and explain the lesions while looking through the microscope, which was very interesting for Iranian physicians.

#### **Renovation of medical school with reappraisal of pathology<sup>7,8</sup>**

In 1939, there was a great development in both the medical school and pathology. Professor Charles Oberling, a famous French pathologist and Professor of the University of Paris, was invited to renovate the Medical School of the University of Tehran. In January 1939, Dr. Oberling started his work as dean. According to the law mandated by parliament, he renewed the medical school's structure (including the schools of dentistry and pharmacy), divided the schools in to 40 departments (Korsi) (28 for medicine, 8 for pharmacy, and 4 for dentistry), appointed a well-trained physician to chair each Korsi (Department), and hired new faculties. By law, he incorporated

municipal hospitals and some private (charity) hospitals in the body of the medical school, in addition to above-mentioned central laboratory which then became affiliated to the medical school. Many of the central laboratory's staff were transferred to new medical school. Each university hospital got a medical laboratory (without anatomic pathology).

According to new regulations, Dr. Habibi chaired the Korsi of embryology, histology and pathology. Dr. Habibi became a fulltime faculty in the medical school. In 1939, he transferred all the equipment from the central laboratory and from his home to the school of medicine, which at this time was in its permanent place in the northern part of Tehran University (Jalalieh). Dr. Habibi completed the facilities necessary for preparing tissue, teaching microscopic slides, expanded the tissue laboratory with a museum of gross pathology and embryology, and taught several students to become laboratory technicians. Among these students was Mrs. M. Tabatabai, who later trained many technicians in this respect.

Until 1938, pathology in Iran was known as "Tashrih-Marazi = morbid anatomy" until Dr. Habibi introduced a new Persian name, "Asibshenasi" which is the correct translation for "pathology". He wrote textbooks in Farsi on pathology (Asibshenasi vol. 1 and 2), which were published in 1943. Other staff in the central laboratory tried to establish or develop medical laboratories in the affiliated hospitals. The tissue specimens from all affiliated hospitals were sent to the central laboratory, which was now located in the school of medicine, and reports were sent back to respective hospital.

Autopsy started later in the medical school. The first formal autopsy was performed in 1937 by Dr. Hashem Hanjan, a German-trained surgeon. At that time, Dr. Hanjan was a member of the Department of Anatomy, at the Second Municipal Hospital, which is now Roozbeh Mental Hospital. Dr. Hanjan was later appointed as chairman of the Department of Maxillofacial Surgery. Dr. Armin, as a medical student and tutor in anatomy, helped Dr. Hanjan with this autopsy.<sup>5</sup> In 1939, as "assistant" in pathology, Dr. Avanes Avanesi, a Russian-trained medical doctor, was placed in charge of the autopsy at Razi Hospital. Dr. Avanesi and Dr. Hosein Rahmatian later finished their residency program in pathology and received certificates in pathology in 1941. In 1940, Dr. Mohammad Kar, another French-German trained

pathologist, was placed in-charge of autopsy at Razi Hospital and taught macroscopic pathology to medical students. Dr. Kar wrote a book in Persian about gross pathology and autopsy, which was published by Tehran University Press.<sup>9</sup> Dr. Habibi and Dr. Oberling also performed several autopsies.

Professor Oberling's first contract terminated in 1942 and he left Iran. He was reappointed, for the second time, from May 1944 to October 1947. Pathology became a separate Department from embryology and histology with Dr. Habibi chairing Pathology and Dr. Flati chairing the remaining departments. Due to a shortage of faculty in Asibshenasi, Dr. F. Motazedi, Associate Professor in internal medicine, and Dr. Aminollah Mesbah of experimental medicine, became affiliated to Asibshenasi in 1941 and 1945, respectively. In 1944, Dr. K. Armin and Dr. H. Rahmatian, after 3 – 4 years residency and assistantship in the department, were appointed as associate professors and joined the Korsi. Asibshenasi became an active department in the medical school. From 1945-1946 new medical schools started to be established in Iran. Dr. Habibi actively participated in this project and, for a while, he became dean of several schools, including Tabriz University. Since tissue processing for microscopy was not automatic at that time, the tissues had to be processed by hand at different intervals with different reagents. Every one or two hours (day and night) the tissue had to be exposed to another reagent. Because of a shortage of laboratory technicians, Dr. Habibi himself would stay many nights in the laboratory to help with the job. Because of these harsh activities, he unfortunately died of a heart attack in 1948 (Ordibehesht 1327) at the age 44 years. Dr. Mohammad-Hosein Adib, professor of the medical school, became the chairman of Asibshenasi.

#### **Adib, Armin, and Rahmatian<sup>10-12</sup>**

Drs. Adib, Armin, and Rahmatian were of great help in developing the department. They expanded teaching activities, wrote books, performed autopsies, established an audiovisual division and museum, and accepted fellows to be trained as pathologists. The laboratory of anatomic pathology become the only laboratory in this regard in the entire country. Two eminent pathologists, Dr. M.H. Ahmadi-Sajjadi (1949) and Dr. A.M. Zia-Shamsa (1950), were the second group of pathologists to join as assistant professors. Dr. Sajjadi, after finishing his fellowship in Iran, studied for four years in the USA. During this era, one or two

pathologists were trained annually and many of them left Tehran for other medical schools or private jobs. In addition, the laboratory was open for medical students and many of them served extra time in the laboratory, helping with research projects. Some of these students included M. Bahadori, A. Mojtabai, and A.K. Mohabbat-Ayin, who later become the members of the department.

Due to the fast expansion of the activity of the Korsi and the importance of research and treatment of cancerous diseases, in 1955 the Korsi was divided into Asibshenasi and Saratanshenasi (cancerology). Dr. Armin was appointed as chairman of Asibshenasi and Dr. Rahmatian for cancer. Associate Professor Sajjadi and Professor Kar stayed in Asibshenasi and Associate Professor Shamsa moved to cancer, which was located in Pahlavi (Imam Khomeini) Hospital. In 1956, Dr. Rahmatian, together with Dr. Hashemian Professor of Surgery and Professor Abbas Maleki Professor of Radiotherapy, established the Cancer Institute of Iran. This institute dealt with recognition, diagnosis, treatment, prevention, and research in the field of cancer. Later, many surgeons, pathologists, oncologists, and radiotherapists were trained in or joined this institute, which is now one of the best institutions in the service of cancer patients in Iran.<sup>13</sup>

#### **Dr. Armin era<sup>14, 15</sup>**

Asibshenasi, under chairmanship of Professor Armin, continued her development rapidly with a good number of well-trained and active faculties. Around 1961, when the University of Tehran changed from Korsi to department, the Korsies of Asibshenasi and Saratanshenasi rejoined and became the Department of Pathology chaired by Professor Armin. The Cancer Institute continued her activity with Professor Rahmatian as head until 1970, when Dr. Abdollah Habibi replaced him. The Department of Pathology was involved only in anatomic pathology. Clinical Pathology was a separate department chaired by Professors E. Bral, R. Nafissy, and others during different intervals. Clinical pathology had a separate residency program, but an MD applicant could get both anatomical and clinical degrees after finishing the combined program. In 1979, Clinical Pathology integrated into the Department of Pathology. The Cancer Institute, in addition to her routine activities, became involved in teaching cytopathology and in the training of cytotechnicians with the cooperation of WHO.

In the Department of Pathology, the activities included: research, performing autopsies, teaching pathology to medical, dental, and allied medical students (theory, macroscopic, and microscopic), and monthly clinical pathology conferences (CPC) with a very good library and many pathology and cancer books written in Farsi. The Department had its own text in pathology written by different faculty members. In addition to the central laboratory in the school of medicine, each hospital developed its own laboratory of pathology chaired by one of the staff of Asibshenasi (pathology) including: Professor Rais-Bahrami for Amir-Alam, Professor Karimi-Nedzad for Zanan, Professor Bahadori for Sina, Professor Pishva for Farabi, and Dr. Mohabbat-Ayin and Dr. Hejazi for Razi Hospitals. Professor Kamalian chaired the pathology division of the Daryoush Kabir Hospital which is now called Dr. Shariati Hospital. These laboratories actively participated in the teaching programs of medical, dental, and affiliated medical students and in training residents in pathology. More than 20 medical students served in the central laboratory in an extracurricular capacity. These students helped in autopsy processing, collecting data, participating in research, and sometimes, in helping with practical teaching to students. The School of Dental Medicine established a division of oral pathology affiliated to the Department of Pathology and Professor Ismail Yazdi, DMD, an oral and maxillofacial surgeon and oral pathologist, chaired this division. This division became independent in 1965.

By performing autopsies and obtaining interesting surgical specimens, the Pathology Museum became enriched and was still located at the central laboratory. It is one of the most valuable teaching museums in Tehran University with a collection of many rare, exceptional samples including teaching "moulages" (remnants from old Madreseh-Teb) and approximately 100,000 microscopic slides, corresponding paraffin blocks, and hundreds of micro- and macro-photographs.

#### **Departments of pathology in other medical schools<sup>10, 15</sup>**

Until 1946, Tehran Medical School was the only medical school in Iran and had several campuses (Amouzeshgah Behdari) in large cities such as Mashhad, Shiraz, and Isfahan. These campuses were involved in training medical-allied professions such as Behdar, midwives etc. Soon after establishing Tabriz University in the East

Azarbaijan in 1946, the second medical school was established and affiliated to that university. This school had a division for pathology run by Dr. Ganjei-Zadeh and Dr. Aryan. By law, in 1949 governmental schools of medicine were established in other universities in provinces such as Shiraz, Mashhad, Ahwaz, and Isfahan. In the meantime, a private university called Melli University was established in Tehran. Soon afterwards, a new medical school called Royal Medical Center (now Iran University), with a new curriculum in medicine, was established in Tehran. These medical establishments started to develop departments of pathology. Professor Armin helped develop departments of pathology in these newly established universities. Some of their pathologists were trained in Tehran but many of them were trained abroad. The pioneers of these departments, as far as I can remember, were Dr. Fatehi, Professor Dutz, and Professor Parviz Haghghi in Shiraz; Professor Ghavam Nassiri in Mashhad (Professor Shamsa for two years, 1951-2, cooperated with him); Dr. Mirhosseini and Professor Parviz Dabiri in Isfahan; and Professor Soltani-Nasab of Melli (now Shaheed Beheshti University).

### Conclusion

Pathology has a fundamental role in medical education dealing with the mechanisms of disease, guided by the influential Oslerian Philosophy, "as is your pathology so is your medical practice". Since the beginning of the new era in Iranian medical education, pathology has been an integral part of teaching and practicing medicine. Pathology developed from merely theoretical lectures to an active tool in learning the mechanisms of diseases, and their behavior, management, and control.

Because of many improvements in technical instruments, advances in molecular pathology, better understanding of mechanisms of diseases,

and integration of different subjects into both anatomical pathology and clinical pathology, these two divisions joined into the Department of Pathology (Asibshenasi) in 1979. The Department of Pathology has one approved combined residency program. At present, more than twenty medical schools in Iran have departments of pathology; many of them have residency programs in pathology which train clinical and anatomical pathologists (CP/AP). In all major cities there are many pathologists who run pathology laboratories, privately or affiliated to hospitals.

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