The pioneering steps of radiology in Turkey (1896–1923)

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Abstract

The discovery of X-rays (1895) by W.C. Roentgen has been a very important step of the modern civilization as a revolutionary technique for scientists all around the world and it has immediately been applied in medical field. The aim of this study is to search the start of radiology in Turkey on the basis of archival and first hand sources.

This study shows that Roentgen apparatus was first installed in Turkey by an intern doctor Esad Feyzi who took the first radiographies at the Imperial Medical School (Istanbul) in 1896. He made use of X-ray method for medical diagnosis later on when Turkish-Greek war broke out in 1897. Esad Feyzi worked in the clinical team led by professor Salih Effendi, MD, at the Yildiz Temporary Military Hospital in Istanbul to take radiographies of soldiers wounded at war in cooperation with the German Red Cross medical delegation. This event is most probably the earliest examples of the application of X-ray technique into military surgery all over the world. Researches have also proven that medical radiography technique was also applied in Greece by Greek and English doctors during that war. This war gave the opportunity to German and British medical teams to use X-ray as a radiographic imaging technique at the two confronting sides that was used in consequent wars in other parts of the world, later on.

The paper deals with the progress of clinical radiology in Turkey until the foundation of the Turkish Republic in 1923.

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1. Discovery of X-rays

One of the revolutionary turning points of the history of medicine is the discovery of X-rays and its implementation for medical purposes. Perceiving the rays which can penetrate through solid materials and reflect their shadows onto a screen, German physicist W.C. Roentgen (1845–1923) called them “X-rays”, and took the first radiographies on this method. He gave the first announcement of the discovery to the scientific circles by a paper on 28 December 1895. This paper was immediately translated and issued in scientific periodicals around the world. Roentgen was decorated with many scientific awards including the Nobel Prize on 10 December 1901. X-rays created a worldwide public interest and sensation in as much as to be published even at the popular newspapers all around the world [1] including Turkey.

Wars at the turn of the century motivated the medical use of Roentgen rays, as doctors in the armed forces quickly grasped the importance of them with regards to military surgery. In Germany, the Royal Prussian Army immediately established a training school for radiographers. The British Army acquired its first X-ray set at the Royal Victoria Hospital, and clinical radiographs were produced by November 1896 [2]. In May 1896, Lieutenant Colonel Giuseppe Alvaro performed X-ray examination on soldiers returning from Ethiopian campaign and succeeded in removing their bullets in the Military Hospital of Naples. [3].
2. Earlier practices with Roentgen rays in Turkey

Roentgen’s discovery echoed in the Ottoman Empire, and a lot of articles were published even in daily newspapers, as well [4]. The topic attracted attention of the people occupied in physics and photography too. For instance, M. Issard, the mathematics teacher of Galatasaray College managed to take picture of metal coins within a purse and took hand radiography of his son aged 11. Besides, Halit Bey, a photographer in Istanbul, succeeded in viewing the lead pieces inside a pencil in 1896 [5].

The start of medical and surgical radiology in Turkey owes a great deal to the scientific curiosity of Esad Feyzi, a medical student, who was specifically interested in physics since his medical high school years. In the beginning of 1896, Esad Feyzi (1874–1902) read an article in Semaine Médicale on the photography technique by X-rays [6]. Desiring to put what he had learnt into practice, he acquired a Ruhmkoff coil, a Crookes tube and a powerful battery and installed the Roentgen apparatus (Fig. 1) at the Physics Laboratory of the Imperial Medical School, and took the hand radiographies of his colleagues by X-rays. These curious and emotional moments were narrated by Dr. Akil Muhtar (Özden) (1877–1949), one of the witnesses of this historic event [7].

3. Use of X-rays on the wounded soldiers during the Turkish-Greek War of 1897

Esad Feyzi was also one of the pioneers in the world to apply X-rays technique for diagnostic and therapeutic purposes. During the Turkish-Greek (or Greco-Turkish) war in 1897, Yildiz Temporary Military Hospital in Istanbul was assigned to the service of the increasing casualties. The Hospital was directed by Dr. Cemil (Topuzlu) Pasha (1866–1958), the professor of general surgery of the Imperial Medical School. Medical students, Esad and Rıfat Osman proposed the transfer of the Roentgen apparatus from the Medical School to Yildiz Hospital in order to use it for radiographic examination on wounded soldiers coming from the campaigns in Thessaly (Greece). Being truly satisfied with this demand, Cemil Pasha gave a report to the Sultan Abdülhamid (1842–1909) asking for permission for Lieutenant Dr. Salih (internist and pediatrician) and his assistants Esad Feyzi (fifth year medical student) and Rıfat Osman (fourth year medical student) to apply radiography technique at Yildiz Temporary Military Hospital. Upon the Sultan’s approval, the Commander in Chief, Rıza Pasha was endorsed to have the doctors attend at Yildız [8]. The medical team succeeded in imaging the bullets and shrapnels embedded into the body of the wounded soldiers. The first patient was Private Mehmet from Boyabat whose radiography was published on 10 June 1897 at Servet-i Fünun, a popular weekly journal, and it was reported by that article that this was the first capture of bullet in the body of the wounded soldier in the world [9].

The radiographic film of the arm was presented to the Sultan by Divisional General Cemil Pasha. The team was awarded by the Sultan with medals [10]. Cemil Pasha also sent some Roentgen pictures of the wounded soldiers to the French Association of Surgery [11] and he presented 30 radiographies of simple and complicated fractures of the wounded soldiers in a scientific session at the Imperial Medical Society in Istanbul on 4 June 1897 [12].

In the meantime, the German Red Cross Medical Delegation composed of Radiologist Drs. D. Nasse, H. Kuttner and Fessler who visited Yildız Military Hospital expressed their admiration at this early application of radiography which was, then, an emerging branch of medicine all over the world [13]. The German team who wanted to experience the feasibility of X-rays in war surgery, installed a Roentgen apparatus they brought with them at Yildiz Military Hospital in May 1897 and worked together with the Turkish colleagues. This has been the second Roentgen device installed in Turkey succeeding the earlier one at Yildiz. The Turkish and German medical teams worked at Yildız together. Dr. Kuttner wrote a report in 1898 dealing with their works and gave detailed
information on the cases they operated, and inserted several radiographies they took at Yildiz Hospital [14].

The interesting thing is that X-ray method was also used on the other side of the front in Greece. Dr. Francis C. Abbott, chief surgeon to the “Daily Chronicle” National Fund for Greek Wounded, installed a Roentgen apparatus at a villa (assigned as a hospital by the Queen Olga) in Phalerum (Athenos) and made use of X-rays for the detection of hidden bullets in the bodies of Greek soldiers coming from the front [15]. Dr. Abbott reported the cases he treated at hospitals in Phalerum and Chalcis in two articles at The Lancet (1899) which were regarded as the first application of X-rays in surgery in Greece [16].

4. A Pioneering book of clinical radiology

After his graduation in December 1897, Capt. Dr. Esad Feyzi was charged in teaching physics at the Military Medical School, and geology and mineralogy at the Civilian Medical School, in Istanbul. His second book is “Roentgen Rays, its Medical and Surgical Application” issued as a manuscript in 1898. Binded with red leather cover and gilded embroidery, it contains 176 pages. This is the first work ever written on X-rays in Turkey and one of the pioneering works in clinical radiology in the world. At the foreword, Surg. Dr. Cemil Pasha emphasizes the importance of the book as the first example, relates the early practices of radiography at the Istanbul Medical School and draws attention to the necessity of establishing radiological wards at hospitals. The book comprises the author’s experiences on X-rays in a 2-year period. Dr. Esad Feyzi gives information on electricity, introduces tubes, explains the X-ray photography technique and film development. He excerpts various medical and surgical applications of Roentgen rays. He notifies that radiography and radiocopy methods were successfully used in war-surgery by the Turkish physicians during the Turkish-Greek war of 1897, but it was overlooked by the international literature since no statistical data were kept. The book includes many sketches of upper and lower extremities drawn by Esad Feyzi himself; and supplemented with 12 X-ray films in original dimensions [17] (Fig. 2). Next year he published a long article on the same subject in Nevval-i Afiyet (Yearbook of Health), an esteemed medical journal of the time, which is regarded as the first scientific article on clinical use of X-rays in the Turkish medical literature. Author also narrates the surgical cases operated by Surg. Dr. Cemil Pasha at the surgical clinic of the Medical School such as the extract of a metal coin from the stomach of a child managed successfully in a few minutes owing to the radiological screening technique [18]. Dr. Esad Feyzi succeeded in covering the school curriculum with therapeutic teaching of Roentgen rays and established radiological examination as a specific branch at the surgical clinic [19]. The third X-ray machine was imported from Germany (Hirschman) and installed in 1899 at that clinic under direction of Cemil Pasha and used by Dr. Esad Feyzi [20].

Fig. 2. A radiography taken by Dr. Esad Feyzi. Esad Feyzi, Roentgen fâ diüve Tahdidan Tıbbıye ve Cerrahiyesi (Roentgen rays, its medical and surgical applications), Istanbul. 1898: annex.

5. The early years, the first installed machines, martyrs, society, private clinics

After Dr. Esad Feyzi’s sudden death of sepsis due to erysipelas in 1902, Dr. Sufyan Bey worked and led the Roentgen laboratory where treatment of cancer by X-rays was started by Dr. Cemil Pasha from 20 June 1903 on [21]. Protection from the harmful effects of X-rays was unknown at those early years, therefore the some of the first radiologist have been the first martyrs too. For instance, succeeding Sufyan Bey, Dr. Ibrahim Vasif (1879–1926), who worked as assistant at the same laboratory, died of cancer due to the severe damage of X rays, like his colleague Dr. Sevki Bey from the same department (d.1930) [22].

The fourth X-ray machine was brought from Germany to Gülhané postdoctoral clinic attached to the Medical Faculty (1899) at the disposal of professor Dr. Deycke, the chief of staff and of Dr. Rifat Osman (1874—Edirne 1933) was charged in the Roentgen department. The fifth machine was put into use at Haydarpaşa Military Hospital in Istanbul; the sixth at Hamidiye Children’s Hospital (14 October 1902) under the direction of Dr. Rasih Emin (1878–1948), who was raised by Esad Feyzi, specialised in France, and died of can-
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X-rays into medicine at Istanbul Medical School, Dr. Esad
department of roentgenology was created within the Istanbul
and he installed the machine in his private clinic in 1902
[27].
A great step forward for radiology was the foundation of
the Radiological Society of Turkey in 1924 by Drs. Sevki
Mazhar Bey (Pera) in 1905 and published his first radiological findings

6. Conclusion
Owing to his leading role on the first implementation of
X-rays into medicine at Istanbul Medical School, Dr. Esad
Feyzi has unique place in Turkish medical history within his
very short span of life. His works have a triggering effect on
the way of adoption radiology as a medical branch in
Turkey, and are more significant in as much as the socio-
historical background is considered when the fall of the Ot-
toman Empire was at hand replacing with the new Turkish
Republic, at the turn of the 20th century. Turkish-Greek war
of 1897 offered both sides of the front the opportunity for
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cal use of roentgenology to the pride of their countries.
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