History and Development of Neurosurgery in Anatolia (Part Two)

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Abstract : In the part II of this article highlights of the events related with the development of neurosurgery are given following settlement of the Turks in Anatolia from the 11.th century to the present day. The current states of training, and international relations is reviewed and anticipated problems for Turkish neurosurgery are discussed.

Key Words : Anatolia, Neurosurgery, Turkish Neurosurgical Society

I have tried to explain the tremendous intermingling of races and cultures in Anatolia, although very superficially, in the first part of this article (10). Migrations of different tribes from east to west, and invasions from west and east have produced rather heterogeneous settlements for uncountable centuries from the early stone age on (1). Readers interested in racial movements in Asia Minor should study specific publications. My main objective was to demonstrate how cultural activities, medicine, surgery and especially neurosurgery, were influenced by this demographic chaos. Again, in the first part of this article I tried to outline the history of neurosurgical procedures performed in Anatolia in antiquity using the references and artefacts available to me. I am certain there is much more awaiting to be unearthed. The earliest recorded findings related with neurosurgical procedures recovered in excavations go back to the neolithic age. A trephined skull found in South Anatolia in recent excavations was estimated to date from even before the neolithic age (12). As the result of the dominance of different regions by different communities with different cultures and at different times, there have been many undulations in the practice of neurosurgery in this land.

Turks, today's main inhabitants of Anatolia , began to migrate from the steppes of Central Asia in wave after wave along the silk road as early as the 9th century AD due to Mongolian pressure. This famous road was only not used for transporting valuable silks from China and India but also to carry the culture and civilization of the far east to the western world (1). They learned and assimilated the knowledge of the countries they passed through and added it to their already existing culture during this long trek. The date 1071 is the landmark for the definite settlement of one of the Turkish tribes namely the Oghuz and they established the first sovereign Turkish state in Anatolia: the Selçuk (Seljuk) empire. There medical and surgical practices were mainly dependent on the works of Hippocrates, Galinus, Avicenna and Albucassis for several centuries (19). Written works were scarce during the early settlement years, most were either partially or totally destroyed and their existence in most cases was only known by hearsay . For example, one is a collection of Turkish medical-surgical works by Turan Melik Hatun (a female physician of the Selcuk empire practising in Divriği Sivas province) written during the 13 th century (personal communication Ahmet Erdoğan Vata). In the Selçuk empire there were several medical institutions for the education of young physicians and the treatment of patients. Some, such as Amasya Darüşşifa (Hospital), were in

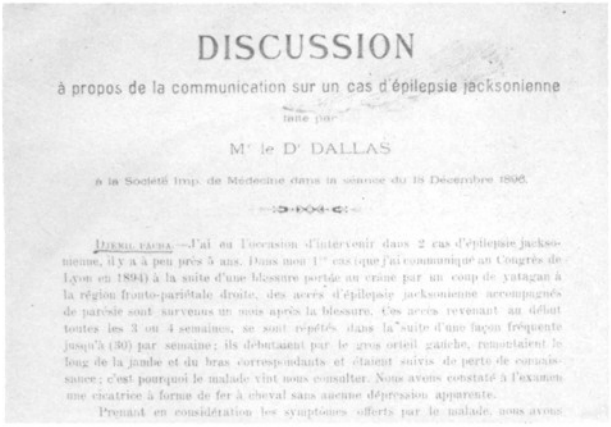
herited from the Byzantine empire and some like Sivas daruşşifa were newly- established by the Selçuks. (founder: Turan Melik Hatun) (Figure-1) (13,16,17, 19,21). The decline of the Selçuk empire was very rapid. It was dissolved during the second half of the 13th century, giving place to several small regional states. One, the Ottoman state, was going to be the sole ruler of Anatolia and a very large part of Europe, Asia and Africa for the following six hundred years.

Fig. 1 : Entrance of Divriği Darüşşifa (Hospital)

We have almost no information about the practice of medicine and surgery for about hundred years following the foundation of the Ottoman empire in 1293. This lack of knowledge is probably due to missing or destroyed manuscripts, during numerous military campaigns and the fast extension of the borders and establishment and settlement of new towns. The Ottoman empire had become a very well organised and stable state with all civilian institutions established by the early 15th century. This was the time when an increasing number of medical- surgical manuscripts appeared, mostly in the Arabic language. There was a small number written in Turkish as it was spoken but the scripts were still in Arabic. However, surgical and especially neuro-surgical texts illustrated with miniatures for diagnosis of diseases and therapeutic techniques were almost non-existent until Şerafeddin (Part I) (10). We observe a tremendous amount of work by Ottoman physicians and surgeons with descriptions of new remedies and surgical techniques up until the 17th century. Unfortunately the decline of the state started at this time and greatly affected our field too and most medical and surgical work and literature entered a dark period. Magic became the fashionable belief instead of objective medicine. Due to this regression the revolutionary developments in medicine and surgery in European countries could not be followed until almost the mid-19th century. This was the time when young Turkish intellectuals noticed the great gap between Ottoman and European countries in every scientific field. First solitary then organised attempts were made to modernise imperial institutions. The first medical school where the teaching was still traditional and fundamentalist was founded in Istanbul in 1827. Twelve years later, in 1839 the first modern medical school was founded, again in Istanbul (13,22). Most of the professors were brought from Europe and teaching was parallel to the medical schools there Apparently the Crimean War (1854-1856) accelerated these efforts greatly. Physicians and surgeons in the Turkish army were extremely disturbed by the discrepancy between them and the medical corps of the allied armies (French, English). As a result, an increasing number of Turkish physicians and surgeons were sent abroad by the government to improve their knowledge and skills in the developed countries, mostly France and Germany. Besides, well known physicians and surgeons of those countries were invited and given positions in the medical school and big hospitals in Istanbul.

Neurosurgical procedures were performed by general surgeons as in the other countries during this period. Here I have to mention one young general surgeon from the Ottoman Medical Corps, Cemil Pasha (Figure 2) (1866-1958), who with a neurologist colleague diagnosed two pyogenic intra-cranial infections and Cemil Pasha successfully operated on both in 1889, just a few years after Macewen (15). He reported his first case in the Congres de Lyon in 1894 and later on, in 1896, published both cases in French in adomestic medical journal (Figure 3) (8). I will not bore the reader by listing all the names and procedures performed by general surgeons in the field of neurosurgery in the following years. The total number of surgical papers published in domestic periodicals between 1849 and 1965 was 7406. Only 750 are related with neurosurgery and 95 percent were written by general surgeons (20). The end of

Fig. 2 : Dr. Cemil Pasha



DISCUSSION

à propos de la communication sur un cas d'épilepsie jacksonienne

faite par

M^r le D^r DALLAS

à la Société Imp. de Médecine dans la séance du 18 Décembre 1896.

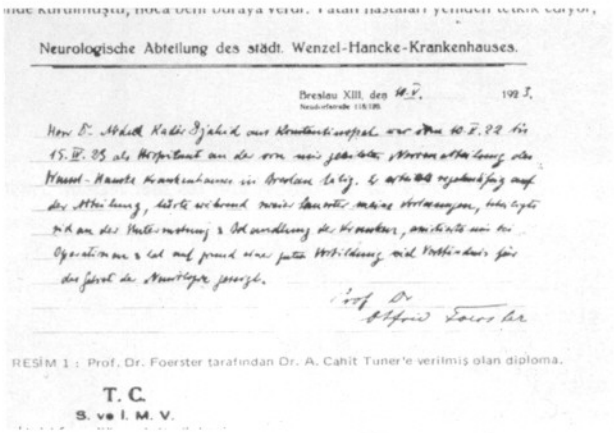
DJEMIL PACHA.—J'ai eu l'occasion d'intervenir dans 2 cas d'épilepsie jacksonienne, il y a à peu près 5 ans. Dans mon 1^er cas (que j'ai communiqué au Congrès de Lyon en 1894) à la suite d'une blessure portée au crâne par un coup de yatagan à la région fronto-pariétale droite, des accès d'épilepsie jacksonienne accompagnés de parésie sont survenus un mois après la blessure. Ces accès revenant au début toutes les 3 ou 4 semaines, se sont répétés dans la suite d'une façon fréquente jusqu'à (30) par semaine; ils débutaient par le gros orteil gauche, remontaient le long de la jambe et du bras correspondants et étaient suivis de perte de connaissance; c'est pourquoi le malade vint nous consulter. Nous avons constaté à l'examen une cicatrice à forme de fer à cheval sans aucune dépression apparente.

Prenant en considération les symptômes offerts par le malade, nous avons

Fig. 3 : Gazette Medicale d'Orient

World War I in 1918 was also the end of the Ottoman Empire and resulted in the foundation of today's Turkish Republic. As in every institution of the old Empire, reforms were made in medical sciences in the new state. The number of fully equipped hospitals rapidly increased and new medical schools were founded.

Now a few words should be said about a young Turkish neuro- psychiatrist, Mazhar Osman Uzman (11,18). Dr Uzman returned to Istanbul after completing his training with Dr.Kraepelin in Munich, Germany after the first World War, and later founded the first modern psychiatric hospital in Bakırköy, Istanbul in 1927. Keeping in mind the importance of this newly-developing medical speciality, neurosurgery, he encouraged some young Turkish surgeons and physicians to be trained in this field. Among them Dr.Abdulkadir Cahit Tuner, a neurologist, was trained in Prof.Foerster's department in Breslau between 1920 and 1923 (Figure 4). He operated on some neurosurgy cases both cranial and spinal in Zeynep Kamil Neurological Hospital in Istanbul years before Bakırköy Hospital was founded. Unfortunately he had to give up neurosurgery after a few years and returned to his original profession, neurology. Another pioneer in our field is Dr.Cemil Şerif Baydur (1894-1967), who received his neurosurgical training in Dr. Clovis Vincent's department in Paris between 1934 and 1935. He practised neurosurgery in a small operating room in Bakırköy Hospital provided by Dr.Uzman and published a book and some articles about neurosurgery , but developed Parkinson's disease at a very early age so he also had to give up (14).



Neurologische Abteilung des städt. Wenzel-Hancke-Krankenhauses.

RESİM 1 : Prof. Dr. Foerster tarafından Dr. A. Cahit Tuner'e verilmiş olan diploma.

T. C.
S. ve I. M. V.

Fig. 4 : Certificate of training, Issued to Dr. Abdülkadir Cahit Tuner by Prof. Foerster

Dr. Hami Dilek (another student of Professor Clovis) was trained in Paris between 1934 and 1937 and also started his neurosurgical career in the same small operating room as Dr.Baydur in Bakırköy Psychiatric Hospital. He improved operating room conditions and founded a new neurosurgical ward and his work was appreciated by both patients and officials. This appreciation gave him the opportunity to convince the Ministry of Health to accept neurosurgery as an independent medical speciality in 1947. An independent department of neurosurgery was founded by (9)him in 1948 in Haydarpasa State Hospital, located on the Asian side of Istanbul, and he trained some young physicians as neurosurgeons (Figure 5).

That department has kept up with developments and progress in neurosurgery and still meets the

Fig. 5 : Dr. Hami Dilek (at the center) and his first residents with the other members of Neurosurgery clinic

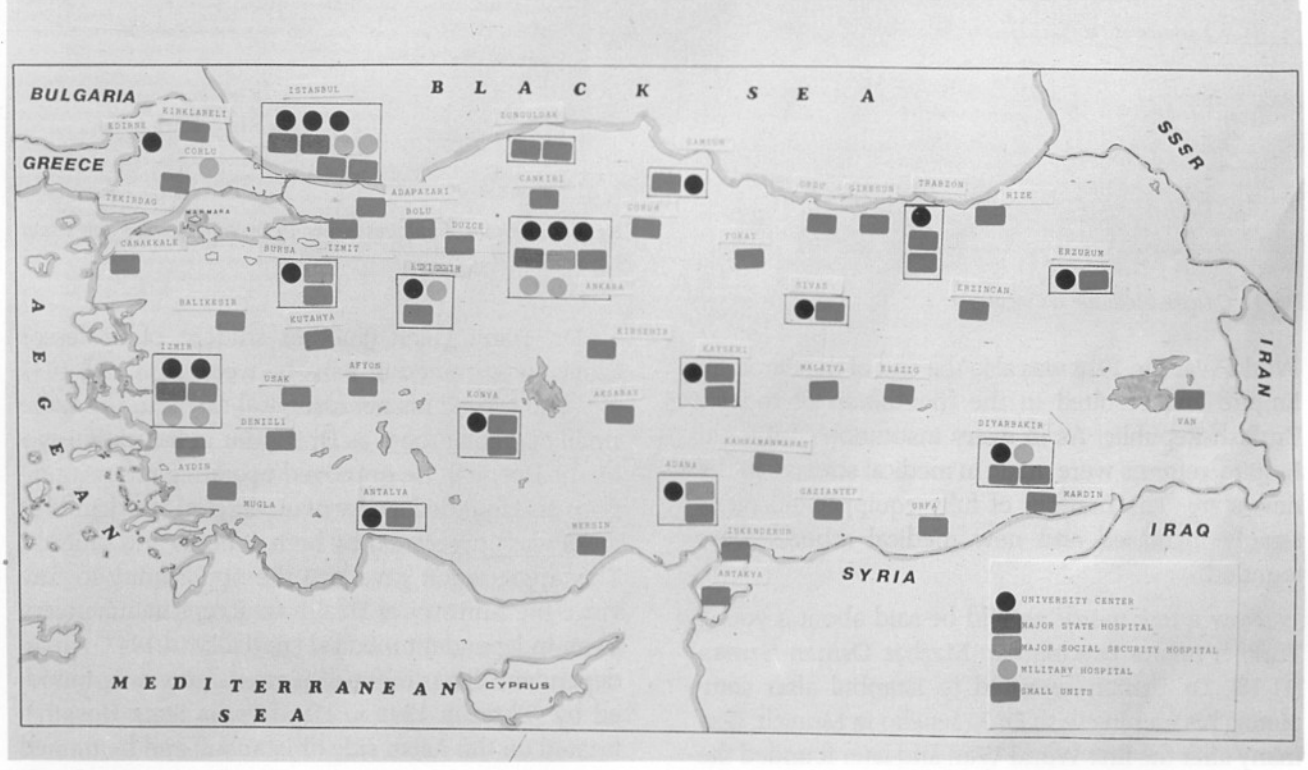


Fig. 6 : Distribution of Neurosurgical departments as today

neurosurgical demand not only from the Asian side but also from a wide area around Istanbul. Thus our speciality was officially recognised and Dr. Dilek should be accepted as the founder of modern neurosurgery in Turkey. The neurosurgical unit in Bakırköy Hospital continued to be active after Dr. Dilek left and today is a very modern, large teaching centre with a well trained staff (Personal Communication, Halil Toplamaoğlu).

We see an increasing flow of new medical school graduates and general surgeons going abroad to be trained in neurosurgery. The USA was the preferred country in the 1950's and 1960's. The result of these ventures has been fruitful and neurosurgical activities in the country have flourished. While there was only one department of neurosurgery in 1948 we now have about 120, mostly in university hospitals and large teaching hospitals. Certainly the number of practising neurosurgeons has increased, today there are nearly 400 certified neurosurgeons in Turkey and the aniual number of neurosurgical procedures performed has increased in a geometrical progression (Table I) (Figure 6).

I would like to say a few words about the organized activities of today's Turkish neurosurgery :

TURKISH NEUROSURGICAL SOCIETY

This society was first founded in 1968, and when the number of certified neurosurgeons was less than 30 was accepted as a full member by the EANS (European Association of Neurosurgical Societies) during the European Congress of Neurosurgery in Prague in 1972. Representation in EANS and participation in its activities were not good enough in the early years due to lack of interest of the society's administrators.

Tablo I : Number of Neurosurgeons and their correlation with the population by the years

Years	1925	1947	1967	1987	1992
Population	11.000.000	19.000.000	32.000.000	50.000.000	56.000.000
Number of Certified Neurosurgeons	–	1	25	250	300
Ratio (Population/Nuurosurgeon)	–	–	–	200.000	187.000

Compulsory renewal became necessary after 1980 according to a new law and from then on the Turkish Society in its new form has progressively become more active . Now with about 300 members it is one of the largest neurosurgical societies in Europe. We participitate in every activity of EANS and WFNS in full, and our members have also become members of several other societies and organisations of the profession all over the world. We attend and give presentations at almost every international scientific meeting especially those of EANS.

MEETINGS AND PUBLICATIONS:

The Turkish Neurosurgical Society organises two meetings each year. One is an official scientific congress with international participation held in the spring, the other is a teaching symposium held in the autumn. In this symposium selected speakers invited from the country and abroad teach young neurosurgeons-in -training about the different aspects of a selected topic followed by an open discussion. Local domestic or international meetings also organized by large neurosurgical centres, are open to colleagues from all over the world.

Two periodicals are published by the Turkish Neurosurgical Society :

1. Türk Nöroşirurji Dergisi, in Turkish, is designed to published articles written in Turkish.

2. Turkish Neurosurgery is in English and designed to accept papers written in English by Turkish or foreign authors. Both journals comply with international standards in content and format.

TRAINING and CERTIFICATION

The official training period in neurosurgery is 5 years (60 months) in Turkey. Of these 60 months:

General surgery	6 months
Neurology	10 months
Anaesthesiology and Reanimation	2 months
Pathology	1 months
Clinical Neurosurgery	41 months

This minumum requirement is extended and different rotations are added in some departments, especially those where advanced techniques and sophisticated neurosurgery is taught.

For certification: There is an examination at the end of the training period before a jury of 3 or 5 specialists in neurosurgery and other fields of neuroscience. A candidate submits a thesis beforehand. If this is found satisfactory than he takes oral, practical and written examinations. A certified neurosurgeon

is entitled to practise neurosurgery in any part of the country.

RESEARCH

I consider our research activities are behind our clinical work. Funds for research are very scarce and the majority are from government sources. Private funds and grants are almost nil. Most neurosurgical research is being done by young trainees and/or assistant professors towards certification or higher academic posts. Experimental research is mainly done in the university departments. We expect a rapid escalation in this field in the near future due to the recent foundation Neurosciences Institutes in three large universities, one in 1982 and two in 1992. These institutes aim to provide facilities for post-graduate (PhD) studies as well as sophisticated research studies in neurosciences Since this development we have observed an increasing number of research papers of good quality submitted for presentation at meetings or for publication. We have already harvested the first fruits of this progress: A PhD student from the first institute won the 1993 Upjohn Prize of EANS.

The Turkish Neurosurgical Society has awarded two prizes for the best research works of young neurosurgeons each year since 1987 . Funds for these prizes are donated by private individuals and the awards are distributed during the official congress of the society. At the same meeting small monetary tokens are also given to the first author of clinical or experimental research papers published in selected international periodicals to encourage young colleagues to do more research and publish their achievements.

RELATIONS WITH EANS

As mentioned before the Turkish Neurosurgical Society has been a member of EANS since 1972. Participation in the activities of EANS increases every year and Turkish representatives are working on several EANS committees. Also Turkish Neurosurgeons give lectures in the teaching courses organized by EANS in increasing numbers. Some of our candidates who attended training courses have already taken and passed the first part of the EANS European Board of Neurosurgery. Although we are yet not a full member we certainly are keenly interested in what is going on in E.C. circles for the standardisation of medical specialities (2,3,4,5,6,7). Therefore Dr.Luc Calliauw the secretary of UEMS (Union Europenne Des Medecins Specialistes) was an invited speaker in the 1993 Congress of Turkish Neurosurgery and gave a general picture of UEMS activities in his speech.

FUTURE

We are proud of the progress Turkish neurosurgery has shown over the last 50 years and have every reason to expect a brighter future. However at this point I think I must express my concern about some dangerous aspects this fast growth has to face in the future. For me these can be classified as:

1. Uncontrolled production of neurosurgeons beyond the need will eventually cause unemployment.

2. The uneven level of training in different departments seems to be the most important problem.

3. Slow and unsatisfactory supply of equipment and instruments: This problem is caused by delay in the development of the surgical instruments and tools industry in our country. As a result most new and high-tech instruments for every surgical speciality are not manufactured in Turkey and have to be imported giving rise to mix ups .Since the majority of medical institutions belong to the government and since the nation's budget is very tight, funds provided for the purchase of instruments for new techniques are limited.

4. Development in associated specialities such as neurochemistry, neuropathology, neuroimaging, therapeutic radiology and interventional radiology is not parallel and slows down neurosurgical progress.

We should remember that all other countries have experienced the same problems and have overcome them with difficulty. Over production of unevenly trained neurosurgeons seems to be the most important problem. If the Ministry of Health, the Turkish Neurosurgical Society and the chairmen of the training centres approach this problem with the same understanding, we certainly can control it before it becomes too dangerous. We have to train our young colleagues to international standards and encourage them to participate in more domestic and international teaching courses and meetings . We must be very careful about developments in the rules and regulations of EANS and UEMS and make the necessary changes accordingly. This is extremely important because I believe sooner or later our country

will be a member of the EC and it is our duty to preserve the rights of our young colleagues in the international arena. We must keep very close contact with colleagues in other countries and participate in similar projects at home and abroad, provide facilities and funds for research and increase our cooperation and collaboration with associated specialities.

The last paragraphs of this article are the personal opinion of a Turkish neurosurgeon who has been active in the profession and involved with every aspect for about 35 years. I understand that it is impossible for an individual who is part of this adventure to be objective. I leave the final evaluation to my fellow neurosurgeons and those who are acquainted with Turkish neurosurgery and Turkish neurosurgeons.

At this point I remember with great respect the pioneers of Turkish neurosurgery, most of whom are no longer with us or have retired. I am grateful to colleagues in the international neurosurgical community who personally actively worked as visiting neurosurgeons in various departments and also trained young Turkish neurosurgeons in their own departments. Finally I express my trust in my young colleagues who I believe will strive to keep up the high standards and progress of Turkish neurosurgery.

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