ON THE REPORT OF THE FIRST SUCCESSFUL SURGICAL TREATMENT OF BRAIN ABSCESS IN THE OTTOMAN EMPIRE BY DR. CEMIL TOPUZLU IN 1891

IN 1891, DR. Cemil Topuzlu operated on a brain abscess that originated as a complication of a depression fracture of the cranial inner table. The patient presented with Jacksonian seizures on his left side after a sharp trauma resulting in a 15 cm-long scalp laceration and underlying linear cranial fracture in the right parietal bone. Dr. Topuzlu attributed Jacksonian epilepsy to the fracture irritating the motor area in the right hemisphere and attempted a craniotomy based on his measurements to localize the Rolandic fissure. The operation was complicated by a brain abscess, and Dr. Topuzlu reoperated to drain the abscess. He successfully treated the brain abscess and Jacksonian seizures and then presented this case in the Royal Society of Medicine of the Ottoman Empire and in the International Surgery Congress in Lyon in 1894. The case report was published in his surgery book in 1905. The case was not only the first case of brain abscess to be treated successfully with surgical intervention in the Ottoman Empire, it was also one of the first cases of neurological surgery performed using contemporary anesthesiological and surgical techniques, which reveals the importance of neurological examination and cerebral localization techniques in the era before x-rays. Dr. Topuzlu was the founder of modern surgery in the Ottoman Empire and deserves to be credited for his novel applications in the 19th century.

KEY WORDS: Brain abscess, Cemil Topuzlu, History, Neurosurgery, Surgery

The modern age of surgery began in the 19th century with developments in anesthesiology, the application of patient care and nursing, and the use of antiseptic and aseptic techniques. The development of modern surgery contributed to the development of neurosurgical applications. Earlier applications of neurosurgical techniques were performed by general surgeons in the late 19th century. Therefore, general surgeons can be considered the pioneers of many neurosurgical applications in the early 19th century, with their applications later cited by their neurosurgical successors.

Although the Western pioneers of neurosurgical applications are well known, the pioneers of the Eastern world are not. Dr. Cemil Topuzlu (1866–1958), pioneer of modern surgery in Turkey, is accepted as the father of modern surgery in the Ottoman Empire (8, 10). Like his Western colleagues of the same era, he applied many neurosurgical applications, including surgical drainage and treatment of brain abscess. This article focuses on Cemil Topuzlu’s successful surgical treatment of Jacksonian epilepsy caused by a depression fracture and complicated by a brain abscess.

Biography

Dr. Cemil Topuzlu, also known as “Djemil Pasha,” was born in Istanbul on March 6, 1866. He attended the Military Medical School in Istanbul and, in 1886 at the age of 20, graduated as a medical doctor (Fig. 1). In 1887, he was sent to Paris to further his education and training in surgery. He studied as a resident under Professor Jules Pean, France’s most famous surgeon at that time, before returning to Turkey in 1890 where he became an associate professor in surgery at the Military School of Medicine the following year. In 1894, he became a clinical professor in surgery and the Chair of the department.

Topuzlu served as chief surgeon of Yildiz Hospital, a special war hospital, and operated on more than 2000 injured soldiers with a very
low rate of mortality (3%). That low mortality rate was recognized and appreciated by Sultan (Emperor) Hamid and the medical community of the Ottoman Empire (Fig. 2).

In 1909, Topuzlu became the dean of a new school of medicine at Istanbul Darulfunun University and Chair of the Department of Surgery. He resigned from his academic positions in 1911 and became the mayor of Istanbul.

During his active surgical practice, Topuzlu performed many general surgical and neurosurgical applications and presented his results in national and international meetings. He also published his studies in well-known medical and surgical journals of the time, including The Medical Press, Weekly Medical, The Eastern Medical Newspaper, Provincial Archives of Surgery, and Bulletin of the Surgical Society (9). He was a member of national and international surgical and medical societies and played an active role in international societies. He was one of founders of the International Surgery Society. In 1905, he published his “best” cases in a surgery book, Memories and Medical Observations. Topuzlu died in 1958 (3, 11).

Report on a “Successful Localization and Treatment of Brain Abscesses Presented with Jacksonian Epilepsy”

Topuzlu reported that a 30-year-old tenant had a sharp trauma, 3 cm lateral to the midline on the right parietal bone, resulting in a 15 cm scalp laceration and underlying linear cranial fracture. As a result, the patient lost consciousness, the laceration was sutured, and the patient awoke 9 hours later with left hemiparesis and hemihypesthesia. He completely recovered within 25 days. Several weeks later, he presented with headache and his first epilepsy attack; the frequency of the attacks later increased to six to eight attacks per day. The seizures, which had started in his left toe, moved to his leg, then to his left arm, and were associated with loss of consciousness. The patient was admitted to the Military Hospital. His examination revealed the healed scalp laceration extending from frontal area to occipital protuberance with no evidence of depression fracture underneath. Topuzlu attributed Jacksonian epilepsy in this case to a lesion irritating the motor area in the right hemisphere.

He operated on the patient on December 15, 1891. Because there was no palpable depression fracture underneath the long line of scalp incision, he determined the localization of the motor cortex by the anatomic landmarks. One day before surgery, he designated the orientation of the Rolandic fissure. He went 57 mm backwards from the coronal suture and reached the surface projection of the superior part of the Rolandic fissure. To determine the inferior end of the fissure, he drew a 7 cm line from the external orbital apophysis at the level of the most prominent part of the temporal bone formed by the temporal crest and made a perpendicular line measuring 3 cm superiorly. The point was the surface projection of the inferior end of Rolandic fissure. He then drew a line connecting the superior and inferior ends of Rolandic fissure.

Under chloroform anesthesia and strict antisepsis principles, Topuzlu made a skin incision a few millimeters posterior to the superior end of the line he drew previously. When he dissected the soft tissues and protected the periosteum, he saw the linear fracture, which was not depressed. He made a medium-sized trephination and observed a depression fracture of the inner table of the parietal bone. Topuzlu removed the fracture. The patient had good recovery and the seizures stopped.

Fifty-one days after the first surgery, the patient developed headache, fatigue, somnolence, and rare seizures similar to those experienced previously, as well as left hemiparesis. Although there was no sign of wound infection, Topuzlu suspected that the seizures and hemiparesis could be related to a brain abscess and decided on emergent surgery using the same incision. After he opened the dura, creamy pus was released. This abscess developed under the trephination area. The day after the surgery, the patient’s paresis, headache, and somnolence had resolved. He experienced a complete recovery in 16 days, and the seizures were resolved completely.

Topuzlu’s entire operative note was written in French for his presentation at the 8th surgical Congress in Lyon in 1894 (Fig. 3). He emphasized the importance of the localization of a brain lesion according to the clinical presentation. In that particular case, the scalp laceration was too long to localize the exact place of depression; moreover, there was no palpable depression on the outer table. He determined his intervention site after performing calculations based on his neuroanatomic knowledge. That case was the first neurosurgical procedure to successfully treat Jacksonian seizure in the Ottoman Empire. It
should be noted that the patient, to the best of our knowledge, was the first reported case of an effectively treated brain abscess in the Ottoman Empire. This case was also published in Mémoires et Observations Médicales in 1905 (Fig. 4).

**DISCUSSION**

With the development of antisepsis, brain abscess and head traumas were treated successfully in the last quarter of the 19th century by surgeons in the Western World. Before that, attempts to treat brain abscesses were rare. In 1768, the French surgeon Sauveur François. Morand (7) claimed to be the first surgeon to perform a successful surgery on an abscess of otic origin located in the mastoid sinus and temporal bone. Dr. James F. Weeds (12), a frontier military surgeon, operated on a cavalry lieutenant who had been shot in the right frontal area of the head. The patient developed meningitis and, subsequently, a brain abscess in the area of the original gunshot wound and presented with papilledema, focal convulsions, and hemiparesis. Dr. Weeds trephined the cranium and drained the abscess; the lieutenant recovered.

The case reported by Gowers and Barker (4) in 1886 was the first case in which a cerebral abscess resulting from otic suppuration had been correctly diagnosed, localized, and evacuated by operation with complete success.

Macewen (5, 6) was one of the most important pioneering surgeons of the 19th century. Unfortunately, his first patient, on whom he operated in 1876, did not survive (1). However, 1 year later, he successfully operated on a case of temporal lobe abscess in a 9-year-old boy with obvious chronic otitis media (5). Macewen attributed his success in the treatment of brain abscess to the development of aseptic surgery based on Lister’s principles and to the development of the principles of cerebral localization (6).

While these developments occurred in the Western World, Topuzlu was sparking a new era in the history of surgery in the Ottoman Empire. Beginning in 1891, he operated on many cases of brain abscesses, spinal tuberculosis, and traumatic and neoplastic cranial and spinal disorders. He published the list of his cases in La Gazette Medicale D’Orient and later in his monograph, “Mémoires et observations Médicales” (2). Topuzlu published the full texts of operative notes performed during his years at Military School between 1893 and 1897 and at the Medical School between 1900 and 1902. The full text of the operative reports of more than 2000 cases performed at Yildiz Hospital were not available and are only mentioned in his memoir (11).

The case presented here is of importance for many reasons. It reports the first patient with a brain abscess who recovered after a successful surgical intervention in the Ottoman Empire. The diagnosis was based on a careful neurological examination, and operative planning and exploration were performed using cerebral localization techniques. Although the patient’s first surgery was complicated by a brain abscess, this was treated successfully with a second surgical intervention. Topuzlu achieved this success almost simultaneously with that of Dr. Macewen. Unfortunately, however, his case was never published in an international journal.

Dr. Topuzlu was one of the pioneers and the founder of contemporary surgery in the Ottoman Empire. His principles became the landmarks of modern surgery in the Turkish Republic. Throughout his successful surgical career, he performed many neurosurgical procedures in craniospinal trauma cases, laminectomies for spinal tuberculosis, and neural anastomosis in patients with peripheral nerve injuries and published the results in his books (8–10). A review of his neurosurgical operative reports demonstrates his meticulous technique to localize lesions according to the neuroanatomic landmarks. This review reveals his neurosurgical applications and highlights the emergence of modern surgery in the Ottoman Empire, as well as its continuation in the Turkish Republic. Dr. Topuzlu deserves to be recognized for his role in the history of surgery not only in Turkey, but around the world.
This is a nice review of the history of neurosurgery and the experience of surgeons in the Ottoman Empire. Too little is known about the remarkable scientific, cultural, and artistic achievements of this empire that lasted for more than 600 years. The history of the Ottoman era includes many notable figures and facts that are not well known in North America or Europe. Reports such as this remind us of how difficult it must have been to explore a patient’s brain looking for a treatable cause of a disease. It must have been a very different experience compared with today’s utilization of imaging the anatomic, metabolic, functional, and vascular detail of a surgical lesion before surgery. This report reminds us that an early “surgeon” was also an explorer and pioneer.

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This report is notable in that diagnosis and surgery were based on excellent assessment of clinical history and signs, all of which were confirmed at surgery. This is the major aspect of this article. Little is added to the clinical management. The added historical review enhances the attractions of the article and puts it in better perspective.

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The latter half of the 19th century is considered the formative period of what we now refer to as the era of modern neurosurgical practice. Although much has been written on the English, European, and American contributors, there have been few articles in our recent literature on individuals who practiced neurosurgery outside of these geographical boundaries, i.e., the Eastern cultures. Therefore, it was most interesting to read of this Turkish pioneer, Dr. Cemil Topuzlu, a general surgeon practicing in the period of the Ottoman Empire, who successfully performed a neurosurgical operation for a brain abscess and achieved a good outcome. In reviewing this article, it is clear that the surgeon’s attention to the anatomic details and the neurological examination were superb and, therefore, led to an excellent outcome. In this historical review, the authors provide us with an excellent clinical presentation along with a biographical background on Topuzlu. Reflecting back on the time that this surgery was performed, one can only call this a most remarkable achievement, one that should certainly be recognized.

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COMMENTS

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hroughout the world, surgery and neurosurgery have developed during the practice of medicine in times of war. In recent centuries, Russia, Germany, Great Britain, France, and the Ottoman Empire devoted great efforts toward improving their medical skills, especially as a means of caring for their injured soldiers. Dr. Cemil Topuzlu was a renowned Ottoman doctor and surgeon from Istanbul. He served as an army medic surgeon during wartime and as a neurosurgeon in civilian life. He was a highly skilled and trained surgeon who learned his skills in Paris under the patronage of Professor Pean, as mentioned by the authors, and was the Chief Surgeon of the Sultan’s palace. He published many articles and presented a number of interesting cases in international congresses; among them was the case discussed in this article, which was presented at the 8th Surgical Congress in Lyon in 1894. Cemil Pasha was not a surgeon but rather an international scientist and academician.

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