

Neuro-Ophthalmology in Turkey

Turkey is a transcontinental country often described as the bridge between the Eastern and Western civilizations. Modern Turkey was founded in 1923 by Mustafa Kemal Ataturk. Higher education was revolutionized in the young republic in the 1930s as many scientists fled Germany and were welcomed in Turkey. These scientists had a great influence on Turkish medicine. Ensuing education reforms led to higher academic standards culminating in 2015 where Aziz Sancar, a graduate of Istanbul University Faculty of Medicine, was awarded the Nobel prize in chemistry for his studies on DNA repair mechanisms.

During this scientific evolution in Turkey, a growing interest arose in the field of neuro-ophthalmology in the early 1960s. This was led by a number of pioneers in the

field. Naci Bengisu (1901–1978) was the founder of Ophthalmology Clinic at Istanbul University and the editor of a journal entitled “Oto-Neuro Ophthalmology” published in Turkish between 1946 and 1965. Gurhan Kendiroglu (1936–2014) was an ophthalmologist from Istanbul University-Cerrahpasa Medical Faculty who, in 1995, published a textbook on neuro-ophthalmology. Tanju Firat (1933–1982) was a professor of ophthalmology at Hacettepe University in Ankara and the editor of a 3-volume ophthalmology text. The second volume was devoted entirely to neuro-ophthalmology. Altan Kayan (1941–2007) from Ege University in Izmir was the first neurologist whose primary interest was neuro-ophthalmology and one of the authors of an early publication on rebound nystagmus (Brain, 1973).



FIG. 1. A group picture from EUNOS Meeting, Istanbul 2007. From left: John Elston, Pinar Aydin O'Dwyer (Congress Chairperson), Kathleen Digre, Robert McFadzean (President of EUNOS), and Tulay Kansu.

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He moved to London in 1982, and worked in neuro-otological research at Institute of Neurology, Queens Square, London. His steps were followed by Onder Akyurekli and Fethi Idiman, prominent neurologists in Izmir at 2 medical schools, Ege and Dokuz Eylul, respectively.



FIG. 2. A stamp (1980) in honor of Dr. Hulüsi Behçet (1889–1948).

A neuro-ophthalmology unit at Hacettepe University in Ankara was begun in 1979. With the establishment of Neurological Sciences and Psychiatry Institute in 1986, a training program was initiated in neuro-ophthalmology. Between 1986 and 2002, 2 ophthalmologists and 1 neurologist completed this program. In addition, between 1986 and 2014, 18 ophthalmologists and 5 neurologists have completed special student program of half-day session each week for 4 semesters (2 years) and subsequently have included neuro-ophthalmology in their clinical practices at various institutions.

Fourteen physicians had part of their neuro-ophthalmology training in the United States, United Kingdom, and Canada (See **Supplemental Digital Content**, Table E1, <http://links.lww.com/WNO/A300>), and returned to Turkey to practice. Nurhan Torun continued her career at Harvard Medical School, Beth Israel Deaconess Medical Center, Boston.

The population of Turkey is 80 million. Currently, there are 183 universities and 82 medical schools, with 4,394 ophthalmologists and 2,673 neurologists in practice. Twenty-five members of the Turkish Neurology Society and 45 members of the Turkish Ophthalmology Society are engaged in neuro-ophthalmology practice (See **Supplemental Digital Content**, Table E2, <http://links.lww.com/WNO/A301> and Table E3, <http://links.lww.com/WNO/A302>). Ophthalmologists often combine neuro-ophthalmology with oculoplastics or strabismus, whereas neurologists combine it with neuro-otology or headache disorders.

In Turkey, the annual congresses of the neurology and ophthalmology societies include topics in neuro-ophthalmology. In addition to regional meetings, educational courses and case discussions are held periodically in different locations throughout the country. Both the Turkish Neurology and Ophthalmology societies

have invited guests from Europe, United States, Canada, and Australia. These included William Hoyt, Norman J. Schatz, and Lars Frisen at the Turkish Ophthalmology

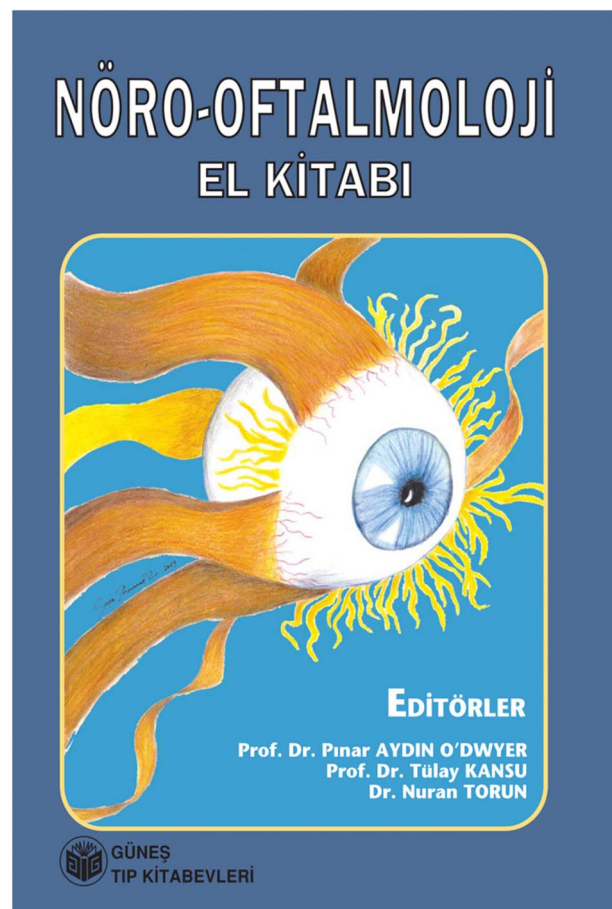


FIG. 3. Turkish textbook of neuro-ophthalmology published in 2008.

Society Meeting in 1988; Michael Sanders, Christopher Kennard, and Robert McFadzean at the Neuro-Ophthalmology Course in 1991; and Peter J. Savino and James Sharpe at a neuro-ophthalmology course in Ankara in 2005. Other invited speakers have been James J. Corbett, David Zee, Michael Halmagyi, Thomas Brandt, Detlef Kömpf, David Kaufman, Eric Eggenberger, Robert Sergott, Neil Miller, and Thomas Bosley.

In 2007, the European Neuro-Ophthalmology Society (EUNOS) Meeting was organized by Prof. Pinar Aydin O'Dwyer in Istanbul (Fig. 1). The local scientific committee was composed of representatives from related medical societies and worked together an international scientific committee. 350 delegates participated from 40 different countries.

Turkey's scientific contribution to the field of neuro-ophthalmology includes 262 articles published between 1974 and 2017 (See **Supplemental Digital Content**, Table E4, <http://links.lww.com/WNO/A303>), Ophthalmic manifestations of Behcet disease are part of this scientific literature. This chronic inflammatory disorder involving the eye and the nervous system was described

by a Turkish dermatologist, Hulusi Behcet (Fig. 2). In addition, a Turkish textbook on neuro-ophthalmology was published in 2008 (Fig. 3) and another text, "Ophthalmoplegias," in 2011. Translated versions of Walsh & Hoyt's Clinical Neuro-Ophthalmology, Neuro-Ophthalmology Review Manual, The Pupil, and Pediatric Neuro-Ophthalmology have all been translated and been made available to Turkish physicians and clinical researchers. Also, Pinar Aydin O'Dwyer has served on the editorial boards of the Journal of Neuro-Ophthalmology and Neuro-Ophthalmology and Nese Celebisoy is now a member of the editorial board of Neuro-Ophthalmology.

The future seems bright for neuro-ophthalmology in Turkey and we look forward to increasing collaboration with the international community.

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