

## Neurological implications of essential strabismus

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Congenital strabismus is an essentially neurological condition with ophthalmologic, psychological, and social repercussions. In spite of the former its true dimension has not been assayed. This disease affects 3% of the population worldwide and represents the most relevant binocular perturbation in humans. Notwithstanding its importance, the origin of congenital strabismus has not been completely established or its neurological implications.

By means of neuroimage studies both functional and morphometric we have found substantial differences in the brains of individuals with strabismus when compared to the asymptomatic population.

From a morphometric point of view, we have encountered that in the cerebral cortex of strabismic patients there is a decrease in small-size granulometric elements in the images of the white substance of this cerebral region obtained by the granulometry technique. On the other hand, from a functional perspective, we have discovered important inter-temporal hipo-coherence when using the neurometry methodology.

Studies using RMI spectroscopy indicate that patients with strabismus exhibit a diminution in neuronal volume, as well as signs of neuronal suffering. Two thirds of the digitized brain mappings obtained from more than 200 patients show cortical dysfunctions such as slowing down of brain waves, paroxysms and eventually some signs of epilepsy, especially in patients presenting "dissociated" ocular movements related to strabismus.

SPECT studies have shown metabolic changes associated with strabismus. The outcomes of all these studies indicate that strabismus is not merely a cosmetic issue, rather it is a clinical manifestation of a deeper nature: A cortical problem.

### Biography

Dr. Martín Gallegos-Duarte is head of the Strabismus Service at the Institute for the Attention of Congenital Diseases in the state of Querétaro, Mexico, he is also registered as strabologist in the Strabismus and Ophthalmology-Pediatric Service in the Mexican Institute of Ophthalmology in Querétaro, he is a physician specialized in eye surgery, particularly strabismus, from the Faculty of Medicine at the National University of Mexico (UNAM, initials in Spanish); currently, he is carrying out a PhD in Biomedical Research in the Laboratory of Biophysics of Membranes and Nanotechnology in the Faculty of Medicine at the Autonomous University of Querétaro. He is a lecturer of the ophthalmology and genetics course at the University of the Valley of Mexico campus Querétaro, as well as a researcher in this same institution. He has occupied the presidency of the Mexican Center for Strabismus, he has held various appointments in the Mexican Society of Ophthalmology; he has delivered lectures and theoretical courses on strabismus and neurostrabismus in different venues in Belgium, Switzerland, France, Brazil, Chile, Colombia, Argentina and Mexico; he is a member of the Mexican Society of Ophthalmology, Latin-American Council for Strabismus, Mexican Center for Strabismus, the Angels Group, Ophthalmologic Society of Querétaro and the Central Region of Mexico. He is a researcher and has published 14 articles and 3 chapters in books, from these, 10 have been published in Mexican journals or in international issues; 5 articles are indexed in PubMed database.

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