



07 DÉC

🕒 07h45 à 10h00

📍 Site Necker, U. Paris Clt 

TH SES ET HDR

Maxence RATEAUX : Corr lations anatomopathologies-sensori- motrices dans les dysfonctions oculomotrices cong nitales

Direction de th se : Matthieu ROBERT et Dominique BREMOND-GIGNAC
Soutenance le 07/12/21

📅 AJOUTER AU
CALENDRIER

Title :

Anatomical and sensorimotor relations in congenital oculomotor disorders.

Abstract :

Oculomotor disorders are often associated with sensory dysfunctions. On the one hand, the proof of the relations between sensory dysfunctions and motor disorders provides some perspectives on the sensory dysfunction assessment in the pediatric practice. On the other hand, these relations could allow to propose new hypotheses on functional oculomotor neuroanatomy.

In 6 patients presenting an infantile nystagmus syndrome (INS) and an eccentric null-zone, oculomotor recordings (OMR) were performed. The expanded nystagmus acuity function (NAFX) was calculated in 17 positions of gaze. Such OMR allow to quantify the change of the null-zone position in after nystagmus surgery. We performed oculomotor recordings in 40 patients exhibiting an INS (23 albinos, 7 with idiopathic nystagmus, 10 with aniridia). Waveform's classification and their correlations with clinical criteria do not support the hypothesis of a specific nystagmus waveform in albinism. However, we demonstrated correlations between the nystagmus waveform and the visual acuity level. Taking angle lambda into consideration is crucial in the pediatric practice; however, no objective quantification method is currently accessible in the clinic. We developed a reliable, reproducible and highly portable method to evaluate the angle lambda from a monocular photograph. We validated the repeatability and the validity of the method in 20 healthy eyes, comparing the measure with a previously validated method. In 70 healthy subjects (140 eyes), angle lambda value under different luminance conditions and biometrical values were quantified. The mean value of the angle measured under standard luminance level was $+2.73^\circ \pm 2.72^\circ$. We found a negative correlation between the angle lambda, the axial length and the anterior chamber depth. The fluctuation of angle lambda according to the pupil dilation state with a decrease during miosis was proved. Five patients exhibiting an abnormal angle lambda and a strabismus were presented. High angle lambda modifies the visual aspect of the strabismus. We purpose a classification of the visual aspect of a strabismus according to the values of angle lambda and strabismus angle. Strabismus screening with corneal light reflex analysis can provide some false negatives and should not be interpreted without being corrected by angle lambda values. Möbius syndrome is characterized by a horizontal gaze palsy, which prevents the use of the cover-test for strabismus screening and measurement. In 34 patients with a Möbius syndrome, a quantification of the angle lambda allowed to explain the measurement discrepancies between the semi-automatic method and the Krimsky method; 17 patients presented an esotropia, one patient presented an exotropia, five presented a micro-strabismus and 11 were orthophoric. Albinism is characterized by a cutaneous and ocular hypopigmentation and an excessive decussation of the chiasmatic optic fibers. It has been hypothesized that the presence of a highly positive angle lambda results from the temporal shift of the fovea due to chiasmal misrouting. We have developed an algorithm that can evaluate the fluctuation of angle lambda during nystagmus. A hundred and seven patients with albinism were recruited. Angle lambda values and the optic disc-fovea distance (OFD) were higher than the control group. The positive correlation between the OFD and angle lambda validates the proposed hypothesis. The correlation between angle lambda, visual acuity and ophthalmological signs of albinism severity allows to propose the use of angle lambda value as a novel severity criterion in albinism.

The development of objective methods for the quantification oculomotor disorders provides a better definition of these disorders phenotypes. Correlations between the oculomotor state and the sensory function provide new ways for the quantification of visual function.

