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Ophthalmologic biomarkers in pediatric psychiatric diseases

Psychiatric disorders are usually evaluated through different specific methods such as interviews, questionnaires or family references. The lack of known biomarkers is an important problem to have an objective diagnosis, that is why researchers have been studying the presence of ocular signs associated to several psychiatric disorders in the last two decades. Ocular motility alterations have been found using eye-tracking devices consisting on infrared video cameras and a computer vision software. Schizophrenia has been the most studied disorder, characterized by some defects in smooth pursuit movements. Patients can not follow a target in a medium velocity and have more frequent compensatory and intrusive saccades. Convergence defects and abnormal patterns of scene scanning have been observed, too. Other physical observations are thick retinal venules and thin retinal nervous fiber layer with OCT. These biomarkers can be used to identify adolescents with risk to present psychotic disorders, due to these alterations can appear earlier. Other disease well documented in children is the attention deficit hyperactivity disorder (ADHD). The characteristic failure of inhibitory systems of ADHD seems to produce abnormalities in saccades, specifically in antisaccades. Likewise, an improvement of saccades has been observed after treatment with amphetamines. One of the most important advances are related with early diagnosis of autism (ASD). In visual preferences test, ASD toddlers show preference to look at geometric images instead of faces and other social images, contrary to well-developed children. Moreover, several studies including 6 to 24-month children show a correlation between the performance of the test and the presence and severity of the disorder. In conclusion, the study of ocular biomarkers by noninvasive eye-tracking techniques in psychiatric disorders can help to obtain an early diagnosis, a better categorization and a better treatment. We encourage pediatric ophthalmologists to collaborate with mental health professionals in eye-tracking diagnosis of psychiatric diseases.

Biography

Joan Prat has completed studies in Medicine (Autonomous University of Barcelona) and Ophthalmology in 1991. From 1991 to 2002 he worked in orbital diseases in Bellvitge Hospital (Barcelona) and later became the Head of Department of Pediatric Ophthalmology in Hospital Sant Joan de Déu de Barcelona until today. He has innovated in eyetracking both in research and development of medical devices for pediatric use and has been attending conferences in WCPOS and EPOS. He is now the Director of Master's degree in Pediatric Ophthalmology in Barcelona University and President of Spanish Society of Ocular and Orbital Plastic Surgery.

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