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Retina and Schizophrenia

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Short Commentary

Schizophrenia is a complex chronic mental disorder, which affects 24 million people worldwide and is responsible for significant functional impairment [1]. Several studies have tried to understand this disease and the involvement of the central nervous system. Neuro-imaging studies have shown structural brain changes in schizophrenia, already evident in the first psychotic episode [2,3].

It is essential to realize how the neurodevelopment and the neurodegenerative domains influence this disease [4]. In our manuscript, entitled "Evaluation of Structural Changes in the Retina of Patients with Schizophrenia", we try to understand how a non-invasive exam, as Optical Coherence Tomography (OCT), can also be useful in schizophrenia, to evaluate the thickness of the retinal nerve fiber layer (RNFL) and macular volume and thickness [5]. In the second part of this study, we try to realize the correlation of these data with cognitive functioning in schizophrenic patients, abstract previously published (entitled "Correlation between macular OCT and cognitive function in patients with schizophrenia") [6].

This was a cross-sectional, observational study that compared a group of patients with a diagnosis of schizophrenia (n=20) and a gender- and age-matched healthy control group (n=20). Patients with schizophrenia were divided in two groups, according to disease progression (<5 and >5 years). Both groups underwent ophthalmological evaluation, where they performed an OCT. Cognitive functioning of schizophrenic patients was assessed using cognitive tests, in a psychiatry appointment. The study was conducted with the collaboration of Ophthalmology and Psychiatry Departments, in the Hospital Prof. Dr. Fernando Fonseca E.P.E., Amadora, Portugal.

Our results showed a significant decrease in all measurements of the macula (volume and thickness) in the schizophrenic group (p<0.05). There was a correlation between increased duration of disease and decreased overall thickness of RNFL (r=-0.338; p=0.033). We observed yet statistically differences in volume (p=0.021) and thickness (p=0.018) of temporal outer ring of the macula between the two groups of schizophrenic patients (less and more than 5 years of disease). Finally, in the schizophrenic group, we detected that macular thickness (p=0.023) and central

macular volume (p=0.022) are positively correlated with attention and concentration, both evaluated by cognitive tests.

Our results suggest that there are differences in the macula of the patients with schizophrenia when compared to healthy controls and that these alterations correlate with the cognitive function, particularly with attention and concentration, and with the duration of illness. So, we found that as the disease becomes chronic, some differences in the OCT measurements become more pronounced, supporting the hypothesis that the disease has a neurodegenerative component. However, our results benefit from a larger sample.

It is already known the importance of noninvasive imaging methods, such as the OCT, in the evaluation of diseases with a neurodegenerative component, such as Alzheimer's disease and Parkinson's disease. With this study, it was possible to conclude that schizophrenia may also fit in this group of diseases, with some previously unrecognized neurodegenerative pattern. OCT is an ophthalmologic exam but, in the future, OCT may be a useful tool in the evaluation of the patients with neurodegenerative diseases. The eye as a "window to the brain" is a reality, especially in the era of the non-invasive diagnostic tests.

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