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Service (sector) Electrophysiology N° CEP

Functional and structural changes associated with commotio retinae

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Purpose: To investigate clinical, anatomic and electroretinographic changes in eyes that suffered blunt ocular trauma with *commotio retinae*. **Methods:** Patients who presented *commotio retinae* after unilateral blunt ocular trauma less than 72 hours before were enrolled. Examination included best corrected visual acuity testing (logMAR chart), biomicroscopy, binocular indirect ophthalmoscopy, fluorescein angiography, optical coherence tomography and full field electroretinogram. Full field ERG was repeated 15 days, 30 days and 2 years and a half and the angiography, 30 days after trauma. **Results:** Sixteen patients were included in the study. The visual acuity ranged from – 0.1 logMAR(20/16) to counting fingers at 20 cm. The first ERG recording was performed from 4 hours to 3 days after the trauma (median 2 days). Eleven patients repeated the exams 15 days after trauma, seven patients repeated 30 days after trauma and six patients repeated it 2.5 years after the trauma. In the first ERG there was statistically significant difference in amplitude between affected and fellow eye in all responses, with no remarkable changes in b/a ratio. There was a significant increase in implicit time in single-flash cone response and 30-Hz flicker in the affected eye when compared to the sound eye. This reduction was more remarkable for the rod scotopic response (47% mean reduction) than in the isolated cone responses (13% reduction in the cone single flash response and 11% in the flicker response). In the second and third ERGs, the difference between the eyes remained for oscillatory potentials, but no statistical significant difference between then eyes was noted in any response in the last exam. In the fluorescein angiography, all patients presented hyperfluorescence due to alterations in the pigment barrier. In the optical coherence tomography, we found optically empty spaces at the site of the lesion. **Conclusions:** Eyes with *commotio retinae* presented transitory electroretinographic changes suggesting photoreceptor and ganglion cells involvement, with possible preservation of Müller cells functions. Angiography showed persistent window defect, due to mobilization of pigment in the retinal pigmented epithelial. The optical coherence tomography showed an optically empty space, confirming earlier reports.