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Comparative study of ocular motility between Gazelab video-oculography and the Hess-Lancaster test

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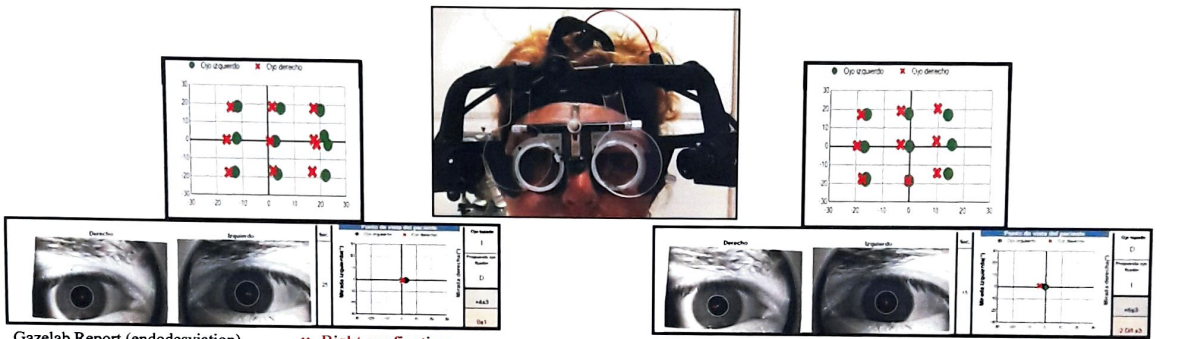
Purpose: To show the ability to explore ocular motility objectively with Gazelab video-oculography.

Gazelab Video-oculography

- Measures motility in the 9 gaze positions: with both eyes open, covering the right eye (left eye fixating) and covering the left eye (right eye fixating).
- Glasses with 2 cameras and a laser that projects towards the 9 gaze postions that the patient must look to.
- The infrared cameras capture the position of both eyes scanning the pupil and iris.
- Software: Patient data, selection of the type of test and report of results (numerical value of the angle of deviation, video and photographic imaging of both eyes and graphs to study extraocular motility).
- Other options of Gazelab videoculography are the evaluation of the Bielchowsky test, nystagmus and the pupils.



Gazelab Report (endodesviation)

✖ Right eye fixating
● Left eye examined (occluded)

● Left eye fixating
✖ Right eye examined (occluded)

Method: Patients with a suspected alteration of binocular vision were selected, referring diplopia or not. Ocular motility was explored in the 9 gaze positions using two methods: Gazelab video-oculography and the Hess-Lancaster test. Ocular motility was measured twice with each method, both at 1 m of distance, first with the right eye fixating and, after, with the left eye fixating (2 final graphs). The diagnoses of the graphs obtained from both methods were then compared descriptively. We excluded all cases presenting with ocular suppression or anomalous retinal correspondence upon sensorial examination, and lack of cooperation in the fixation of the gaze positions.

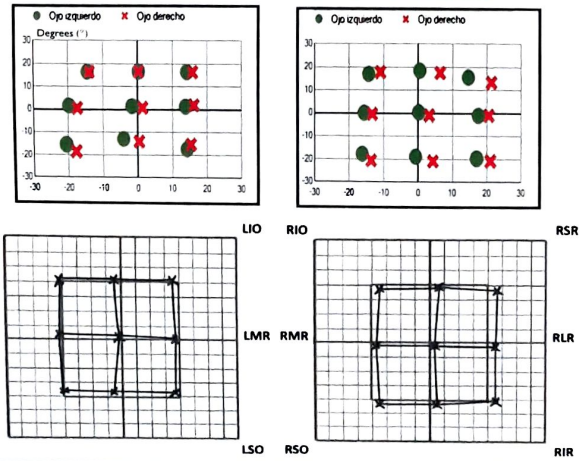
Subsequently, excluded patients who could not do the Hess-Lancaster test by suppression were explored with video-oculography.

Results: 21 cases were selected. 4 cases were excluded due to suppression and 5 cases due to lack of cooperation in fixation. A total of 12 cases were finally examined with both methods, 8 men and 4 women, ages between 6 and 84 years. Diplopia was reported in 8 cases. The results obtained when comparing both methods showed the same diagnoses: 6 endodeviations (1 of them paretic), 1 exodeviation, 2 endo and vertical deviations, 1 exo and vertical deviation, 1 vertical deviation and 1 without deviation. The cases excluded by suppression, extraocular motility could be explored later with video-oculography.

Example - case 1: The Gazelab video-oculography and the Hess-Lancaster test show a diagnosis of exo and vertical deviation after comparisng the resulting graphs of both tests.

✖ Right eye fixating
● Left eye examined

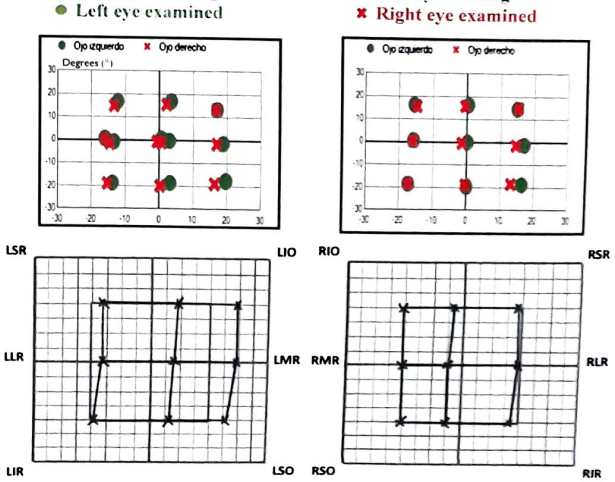
● Left eye fixating
✖ Right eye examined



Example - case 2: The Gazelab video-oculography and the Hess-Lancaster test show a diagnosis de mild paresis of the right lateral rectus after comparising the resulting graphs of both tests.

✖ Right eye fixating
● Left eye examined

● Left eye fixating
✖ Right eye examined



Right Superior Rectus (RSR), Left Superior Rectus (LSR), Right Lateral Rectus (RLR), Left Lateral Rectus (LLR), Right Inferior Oblique (RIO), Left Inferior Oblique (LIO), Right Superior Oblique (RSO), Left Superior Oblique (LSO), Right Medial Rectus (RMR), Left Medial Rectus (LMR), Right Inferior Rectus (RIR), Left Inferior Rectus (LIR).

Conclusions: We demonstrate that Gazelab video-oculography facilitates the objective examination of ocular motility, aiding in the study of binocular vision disorders. This new method can be used both in children and adults, and in patients with suppression. The learning curve is, however, greater with the Gazelab video-oculography than with the Hess-Lancaster test.

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