Visual Field Perimetry for Children using the MonCVOne Machine

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Purpose

Visual Field (VF) perimetry tests in young children can be both difficult and unreliable. For most children, reliability improves after the age of approximately 7-9 years. Recent data for VF assessment in children is scarce. Our aim was to assess the potential for obtaining accurate VF results for children under the age of 9 years.

We trialled the MonCVOne machine (Figure 1) to see whether the machine can provide accurate VF results in children under the age of 9.

The MonCVOne is a projection perimeter capable of static, kinetic and mixed perimetry. The machine is connected to a desktop or laptop, which is placed to the side of the machine to allow the examiner to monitor the patient's fixation through an eye tracking device. This permits for subjective and objective responses. The kinetic perimetry function can be used manually in a way similar to Goldmann perimetry. The integrated high resolution infrared video sensor is used to monitor the fixation of the patient throughout the test and can also be used to record objective stimulus responses.

Figure 1

Method

We used the MonCVOne machine on a manual option to test kinetic perimetry, in a way similar to Goldmann perimetry. We aimed to use subjective responses where possible. In some patients objective responses were necessary due to patient understanding.

For a subjective response the patient was asked to press the button on presentation of a white stimulus. For an objective response the patient was asked to look at the white stimulus whenever it was presented. This would allow the examiner to record the response as the patient looks at the stimulus using the video sensor. To ensure accurate fixation the examiner would present the stimulus in the centre after each peripheral stimulus presented to control the patient's fixation.

Results

We trialled the machine on a total of 18 patients of age range 3-9 years old. 85% of the patients were aged 8 or under and in particular 30% these were under the age of 5. (Figure 2).

Figure 3 shows an example of a 6 year old patient's VF result from just the MonCVOne machine using subjective responses.

Figure 4 shows an example of an 8 year old patients visual field result from kinetic perimetry on the MonCVOne machine. The results are presented and compared to Goldmann VF results shown in figure 5. This result in particular shows the validity of the MonCVOne machine in obtaining a VF result similar to that of Goldmann parameters.

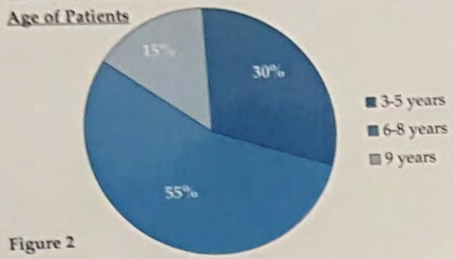

Figure 2

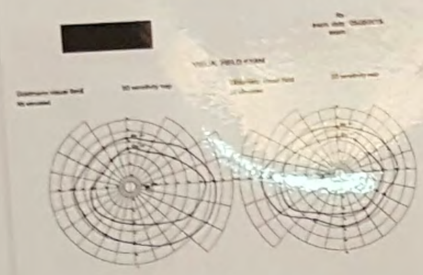

Figure 3

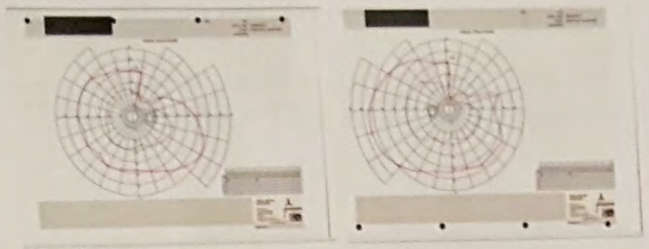

Figure 4

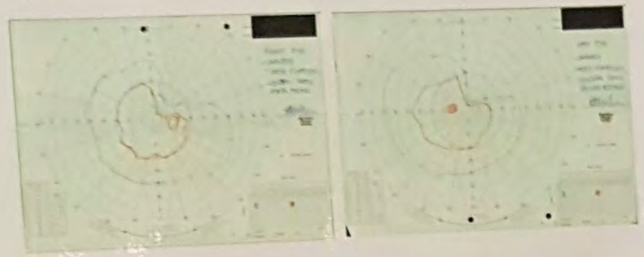

Figure 5

Conclusion/Discussion

The MonCVOne gives reliable and accurate VF estimates in children under 9 years. We found that younger children (under 5 years old) responded better on the test when recorded objectively as less information was needed to be given to the patient to undergo the assessment.

We essentially demonstrated the machine's validity by comparing the kinetic perimetry results with Goldmann perimetry results for the same patient. Although this patient was slightly o years old), this information is still valuable as we know we can perform the MonCVOne younger children which would identify defects in a way similar to Goldmann perime

The Goldmann VF machine is difficult to operate for examiners who may have sho problems and so the MonCVOne provides an easier method of operation. We four examination to be reasonable for the patient to maintain steady fixation and mini Duration of test was variable on ability, but including explanation to patient and from approximately 7-10 minutes. This was with presentation of a maximum of but in most cases only 1 stimulus intensity. With the assessment being simple to and quicker than a Goldmann VF assessment this gives advantages for accurat Finally being able to save the results on a computer allows for saving and re pr would benefit us in the event of missing notes.

Some authors describe the noise of the stimulus presentation prompting the p buzzer[1-2], but we didn't find this to be a problem with the MonCVOne.

In conclusion, we have found the MonCVOne to be a useful method of VF acq children. We plan to conduct a pilot study in order to validate it's level of obje

References

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2. Tschopp C, Safran A B, Viviani P, Bullinger A, Reicherts M, Mermoud C. Automated visual field examination in children aged 5-8 years Part 1: Experimental validation of a testing procedure. *Vision Research* 1998;38:2203-2210.

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