EXAMINATION OF VISUAL FIELDS IN THE PHYSICALLY HANDICAPPED CHILD

Vivienne Gordon, D.O.B.A.
School of Orthoptics, Lincoln Institute of Health Sciences, Melbourne.

Abstract
Examination of visual fields in the physically handicapped child presents a challenge. Using the Friedman visual field analyser, a form of static perimetry, acceptable accuracy, speed, repeatability and a permanent record is obtained. Information gained forms part of the data on which classification, treatment and the rehabilitation program are based.

Key Words
Perimetry, handicapped, rehabilitation.

INTRODUCTION

Examination of visual fields in the physically handicapped child presents a challenge. Most forms of perimetry are too difficult for these children, requiring a higher degree of concentration for a longer period than can usually be sustained and a degree of subjective response that cannot usually be relied upon. For this reason, the simple confrontation method of visual field testing was used on over 300 physically handicapped children examined in a visual screening program at Yooralla Society of Victoria during the past four years. However, it was found that this test was providing information with a low level of accuracy and reliability because of the higher incidence of supra-nuclear gaze and fixation maintenance disorders and the often very slow or unreliable subjective verbal responses. Over the past nine months in an effort to obtain reliable visual fields the Friedmann visual field analyser has been used as part of this screening program and the results are discussed.

METHOD

The Friedmann visual field analyser is used to examine the central visual fields for the presence of a defect. Each eye is separately examined. Static illuminated targets are presented 2, 3 or 4 at a time. In total, 46 targets are displayed in 15 separate presentations. The light intensity of the targets may be varied. The patient is required to indicate the number of lights displayed in each presentation.

In testing these children we used maximum light intensity of targets at all times for all children, irrespective of age, and used dim room illumination. In most cases the patient was asked to point with his hand to indicate the position and number of lights seen, since many of the children are unable to count accurately. The examiner must sit beside the instrument facing the patient to ensure accurate fixation of the white central target at the time the firing button activates the light flash which illuminates the targets. It is easier to use the remote control firing button rather than the button at the rear of the instrument. When testing we displayed the targets in reverse order.

RESULTS

During the past nine months 46 children between the ages of seven and 16 years have been examined using this method. Reliable results have been obtained on 35 children. The unreliable results were mainly found among the younger children due to inattention, but two of the older children failed to produce reliable responses, one because of severe manifest nystagmus and one refused to co-operate. It was found that the actual testing took only three minutes per eye. However, it often took up to 10 minutes to correctly position the child at the instrument because of difficulty adjusting to the extremes in size and mobility of

the children. Wheelchairs, standing frames and calipers present special problems as do physical disorders such as hypotonia, hypertonia, deafness and dribbling.

When it was possible for a second person to assist the examiner by recording the results it was easier to maintain the child's attention and concentration and the test was performed more quickly.

Targets were presented in reverse order because this meant that the more central targets were presented first, allowing the child to more readily understand what was required.

Children who were hyperactive, with a short attention span were tested twice and if still unreliable, listed to be checked again in 12 months.

CONCLUSION

The ability to provide accurate, repeatable visual fields in physically handicapped children has wider value than just as part of the ophthalmic assessment of the child where it can help in determining the aetiology, site of lesion, classification of ocular defect and ocular management generally. Medical, para-medical and teaching staff frequently request information about the visual fields of such children which we are now able to provide. The information allows the rehabilitation program to be appropriately modified where visual field defects are present.

SUMMARY

The Friedmann visual field analyser is a useful test to the orthoptist engaged in the examination or treatment of handicapped children. The method has the advantages of acceptable accuracy, speed, repeatability, is a portable test and provides a permanent record.