

Visual assessment in multidisabled infants

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Abstract. The importance of an early visual assessment during infancy is due to the main role of vision in comprehensive development and to the correlation between early rehabilitative intervention and progress in visual function. More than 50% of children with low vision have also other impairments, therefore the visual assessment requires a multidisciplinary approach. Here we propose for discussion and comparison a detailed protocol we use at the Robert Hollman Foundation for multi-disabled infants from birth to 3 years old. This protocol is functional-diagnostic with the aim of individuating visually impaired children to give them the chance to start an early rehabilitation programme. It is composed by a diagnostic neurophthalmological assessment, which is done at the Centro Regionale per Ipovisione of Padua Hospital, and by a functional/rehabilitative assessment, which is done at the Robert Hollman Foundation. Particular importance is given to create the comprehensive conditions to enable the child to give his/her best performance during the assessment. In fact it has already been shown how the environmental conditions and the kind of stimuli are determinant in permitting an accurate evaluation of the visual situation of the infant. Moreover, in multi-disabled children, aspects like postural and non-verbal signs become fundamental in the visual assessment. © 2005 Elsevier B.V. All rights reserved.

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1. Introduction

Visual assessment is the first step to start an early intervention and a rehabilitative path with the visually impaired children [1]; we know from literature [2] that the majority of these children have also other impairments and that visual functions of multi-impaired

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Table 1

Low vision ophthalmological assessment

Case history

Structures of the eyes (eye morphology)

Observation of visual behaviour

Ocular motility examination, fixation, smooth pursuit, following and saccadic eye movements

Cover test

Stereoacuity test (Lang II)

Visual acuity (preferential looking test, Lea symbols chart or EDTRS letter chart in accordance with children age and cooperation)

Contrast sensitivity (Lea symbols, EDTRS chart, Hiding Heidi preferential looking test)

Colour vision test (Ishihara test, preschool cards, Montessori test, Farnsworth 15)

Visual field examination (Goldman Perimeter, finger-toys or confrontation techniques)

Slit-lamp examination

Tonometry

Refractive errors determination (computerized refractometry with cycloplegia) and optical aids

Fundus ophthalmoscopy

Fundus camera examination

Fluorescein angiography

Ultrasound (A–B scan standardized echography)

VEP (flash, pattern and flicker)

ERG (rod and cone ERG)

Examination under sedation

children are often difficult to determine [3]. At the Robert Hollman Foundation, we integrate the clinical neurophthalmological assessment, which is performed at the hospital, with a functional/rehabilitative evaluation, which is performed in a special environment, created and adapted to the personal characteristics and needs of the visually and multi-impaired child, which are pointed out during the staying.

2. Functional-diagnostic protocol

At the Robert Hollman Foundation we use a protocol, which is composed by: (1) *Neurophthalmological assessment*, which is performed at the “Centro Regionale per Ipovisione”, Department of Paediatricians, University of Padua (Table 1). (2) *Functional/rehabilitative visual assessment* (0–3 years), which is performed at the Robert Hollman Foundation Center (Table 2).

Sometimes, if during the staying there is a need to examine closely some aspects of the orthoptic evaluation (Table 3), there is the chance to make it inside the Centre, considering the environmental effects on infant’s visual answers.

3. Discussion and conclusions

We consider the functional/rehabilitative assessment the first and fundamental step in the rehabilitative path, after the clinical diagnosis. We know from literature how visual assessment is often difficult to be determined in multi-impaired children [3] and also how environmental conditions and the kind of stimuli [4,5] are essential in permitting an accurate evaluation of the visual function. Therefore, in our integrated functional-diagnostic protocol, particular attention is given to all the surrounding environmental characteristics which influence the child’s vision, increasing the chance of obtaining the

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