Establishment of High-Risk Infant Follow up Clinic for Implementation of Early Diagnosis of Cerebral Palsy Guidelines

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INTRODUCTION

Cerebral palsy is a clinical diagnosis based on a combination of clinical and neurological signs. Diagnosis typically occurs between age 12 and 24 months [1,2]. Exact rates in countries of low to middle income are less certain but appear to be higher, with worse physical disability, because of greater infectious disease burden and prenatal and perinatal care differences [3]. diagnosis can be accurately made before 6 months' corrected age [4]). Delays in diagnosis can have negative long-term consequences for children and parents. There are new guidelines for early cerebral palsy diagnosis and intervention that were recently published [4].

OBJECTIVES

The current study tested the feasibility of implementing early diagnosis guidelines in an Egyptian clinical setting because currently in Egypt, there are no formal follow up process for high risk infants who are graduated from neonatal intensive care unit.

MATERIAL AND METHODS

A step-wise implementation process was designed for the new early diagnosis guidelines that starts by brief evaluation of the infants before discharge and preparation of timely adjusted follow up procedures starting from 3 months adjusted ages. The follow up process included the use of formal neurological assessment methods including: Ages and Stages Questionnaire, Hammersmith Infant Neurological Examination (HINE), Test of Infant Motor Performance (TIMP) and Movement Assessment of Infants (MAI). In addition, MRI images were obtained at 3 months age. The whole process started in March 2020 till June 2022.

first visit: at the NICU - done once baby is stable - Goal:- examining the baby - reviewing medical records - meeting parents

second visit: at the Clinic - at 2 weeks - Goal: - examining the baby - reviewing th medical records - counseling parents regarding the outcome - reviewing overall health status including nutrition and sleep

Third visit: at the Clinic - at 3 - 4 months

Goal: - formal assessment - HINE & TIMP - Referral if needed - Physical therapy if needed

Forth visit: at the Clinic - at 9 - 12 months -

Goal: - Formal assessment HINE & MAI - Referral if needed - Physical therapy if needed

RESULTS

The study included 57 infants (32 males and 25 females) with male to female ratio of 1.28. Their ages at first presentation ranged between 2 and 12 months with a mean of 5 months ±3 Their residence is demonstrated in table (1).

Table (1): Geographic Distribution of the Studied Population (n=57)

Governorate	No	%
Alexandria	35	61.4
Behaira	16	28.1
Kafr El Shaikh	5	8.7
Gharbyia	1	1.8

Twenty infants were born prematurely. Table (2) demonstrates the distribution of risk factors for cerebral palsy among the studied infants.

Table (2): Distribution of Risk Factors for Cerebral Palsy among the Studied Infants (n=57)

Risk Factors*	No	%
1. CNS anomalies	8	14
2. COVID during pregnancy	1	1.8
3. In-vitro fertilization	4	7.0
4. Twin pregnancy	3	5.2
5. Gestational Diabetes	2	3.5
6. Prematurity	20	35
7. Intra-uterine growth retardation	7	12.3
8. Hypoxic ischemic encephalopathy	11	19.2
9. Birth trauma – hemorrhage – stroke	3	5.2
10. CNS infections	2	3.5

*more than one risk factor may be present

At the first visit, the mean raw score for HINE was 50±19. The mean raw score for TIMP was 35±41. Twenty four infants came for the second follow up visit at 6 months age. The mean raw score for HINE was 30±21 and MAI was 6±16. Only four infants attended the third visit at 9 months age. Their mean raw score for HINE was 15±4 and their mean raw score for MAI was 1±5.

CONCLUSIONS

This study demonstrated that the presence of rigorous strategy for early diagnosis of cerebral palsy is mandatory in order to achieve optimum potentials of long-term development among high risk infants. These methods should ensure accurate and reliable pathway for early detection. The reasons behind lack of commitment of parents to attend follow up visits could be explained by their lack of awareness of the importance of close monitoring of the developmental status of their infants. Further research is needed to select the most appropriate method(s) to strengthen parental commitment to the follow-up program.

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