

Neuro-Regression Assessment: A Case Report

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Abstract:

Introduction: Neuro-regression can occur for various reasons, including neurodegenerative diseases such as Alzheimer's disease, certain genetic disorders, brain injuries, infections, toxic exposures, or metabolic disorders. It is often characterized by a progressive deterioration of neurological function over time. Neuro-regression can be caused by a variety of factors, including, Neurodegenerative diseases, Genetic disorders, Brain injuries, Infections, Toxic exposures, and metabolic disorders.

Objective: The goal of this case report is to highlight the difference between developmental delay and developmental regression also known as Neuro-Regression in terms of differential diagnosis.

Case Report: A 2.2-year-old male child, with a background of developmental delay and epilepsy was admitted with multiple episodes of breakthrough seizures. Developmental milestones were age-appropriate till 11 months of age (before the seizure). After the seizure, the child's motor development regressed and the child was not able to sit, or stand. The speech and language milestones were appropriate to the age before the seizure and regressed after the seizure.

Conclusion: In our study, it's very clear that the child experiencing neuro-regression which is evident based on the parents' report, previous and present clinical assessments as well and clinical observation. Regression is an indication that more investigation is necessary and team members like a Developmental Paediatrician, Neurologist, and Clinical Psychologist should be involved.

Keywords: Neuro- Regression, Developmental Delay, Developmental Regression Speech Delay.

Introduction:

The etiology spectrum for neuro-regression in infants and toddlers is diverse. Neuro-regression typically refers to a loss or decline in neurological function or abilities that were previously acquired. This can manifest as a decline in cognitive, motor, language, or social skills. Neuro-regression can occur for various reasons, including neurodegenerative diseases such as Alzheimer's disease, certain genetic disorders, brain injuries, infections, toxic exposures, or metabolic disorders. It is often characterized by a progressive

deterioration of neurological function over time. Neuro-Regression can be caused by a variety of factors, including, Neurodegenerative diseases, Genetic disorders, Brain injuries, Infections, Toxic exposures, and metabolic disorders. Even while hereditary factors account for the majority of cases, it's crucial to remember that abrupt onset regression can also be brought on by elevated intracranial pressure from a brain tumour, hydrocephalus, meningitis, or encephalitis. Hypothyroidism, persistent lead poisoning, and vitamin B12 insufficiency are some curable reasons for regression. Symptoms may vary widely depending on the underlying cause but may include cognitive decline, motor dysfunction, language difficulties, behavioral changes, or loss of developmental milestones.

Case report:

A 2.2-year-old male child, with a background of developmental delay and epilepsy was admitted with multiple episodes of breakthrough seizures. The child had a history of seizures at 11 months of age and the child is currently under medication (Livipil and Topomax 25 mg). The seizure lasted for 1 hour with widening of eyes, stiffening of limbs, and crying. No history of fever was reported. Birth History revealed that the child was born at term by normal vaginal delivery, and had cried immediately, with a birth weight of 2.4 kg. There was no NICU admission. Developmental milestones were age-appropriate till 11 months of age (before the seizure). After the seizure, the child's motor development regressed and the child was not able to sit, or stand. The speech and language milestones were appropriate to the age before the seizure and regressed after the seizure. On examination, the patient looked apathetic and exhibited lassitude. He could neither hold his neck up nor reach for objects but recognized his mother's face. There was no pallor or hyperpigmentation of his oral cavity, the dorsum of his hands or feet. Anthropometric measurements were a weight of 6.8 kg. Detailed history also revealed that the child was shown to the government hospital at 11 months of age for the seizure episode. Parents also noted some motor regression in the last 1 year in the form of difficulty with sitting and crawling. However, there was no regression in social interaction. For further confirmation the child was referred to a developmental pediatrician and a neurologist they also confirmed that it was a case of neuro-regression. Currently, the child taking rehabilitation services for the condition.

Genetic Test Report:

Results: Variants of uncertain significance related to the given phenotype were detected.

Potential Developmental Trajectories

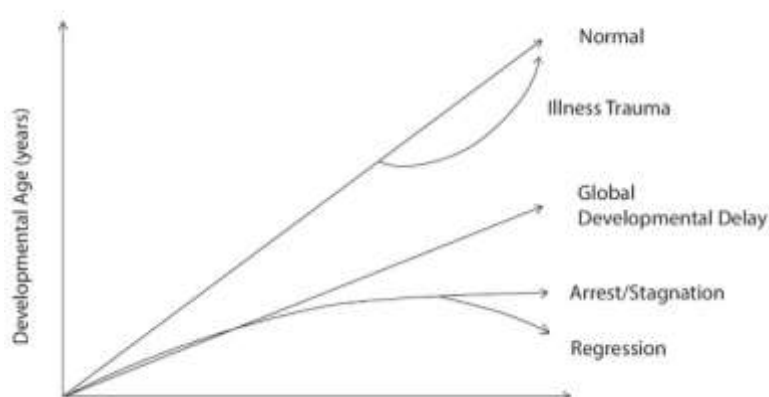


Figure 1: Potential Developmental Trajectories

Discussion:

The inability to meet developmental milestones in relation to peers in the same age range is known as developmental delay. Being more than two standard deviations below the mean is the general definition of this. The following are the primary developmental milestone domains: speech/language, fine motor/vision, gross motor, social/emotional, and cognitive. Developmental delay for which additional research is necessary to determine the potential cause. It is possible to isolate a delay that only happens in one domain. A notable postponement could suggest that the child suffers from a certain underlying syndrome or developmental problem. (e.g. learning disability or autism spectrum disorder). An infant experience neuro-regression when they fail to gain new skills or even lose skills they have already obtained after going through a typical growth phase which is mentioned in the above figure 1. In our study, it's very clear that the child experiencing neuro-regression which is evident based on the parents' report, previous and present clinical assessments as well and the clinical observation.

Conclusion:

Global developmental delay is the term used to describe a child under five years old who has a severe delay in at least two categories. With the correct assistance, it can be temporary. On the other hand, the delay can be more serious and call for ongoing assistance. Regression is an indication that more investigation is necessary and team members like a Developmental Paediatrician, Neurologist, and Clinical Psychologist should be involved. Neuro-regression is also known as developmental arrest and/or developmental regression.

References:

1. Srivastava, P., Sunder, S., & Sarkar, N. (2020). A rare case of Neuro-Regression in an Indian child: beyond the realm of nervous system. *International Journal of Contemporary Pediatrics*, 8(1), 165–165. <https://doi.org/10.18203/2349-3291.ijcp20205452>
2. J Eric Piña-Garza, & James, K. C. (2019). *Fenichel's clinical Pediatric Neurology: a signs and symptoms approach*. Elsevier.
3. Edward Morgan Brett. (1997). *Journal of Pediatric Neurology*. Churchill Livingston.