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Case Report of Autism with Celebral Palsy

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ABSTRACT

The present case report entails the due psychological assessment and behavioural management of a 5-year-old boy with Autism Spectrum Disorder (ASD) comorbid with Unspecified Intellectual Disability and diplegic Cerebral Palsy, which demonstrates how neurodevelopmental and neurological conditions can be quite complicated to treat when the conditions overlap. The research was a single-case study design and involved the following instruments: clinical interview, behavioural observation, DSM-5-TR diagnostic checklist, subjective severity ratings, Portage Guide to Early Education (PGEE) and Childhood Autism Rating Scale (CARS-2). The developmental assessment showed severe delays in all aspects, functional age between 1-2 months even though the chronological age is five years. The CARS raw score of 39 depicted extreme symptoms of autism. On the basis of assessment, the individualized intervention plan based on the principles of behavioural therapy, entailing reinforcement, prompting, structured play, sensory-based games, and parent psychoeducation was introduced as a 30-session programme. Comparisons after intervention indicated small improvements in self-harm behaviour and irritability with minimal further improvement in eye contact and fine motor skills; but gross motor impairment was hardly improved as a consequence of underlying cerebral palsy and neurological defects, in terms of ventriculomegaly and arachnoid cyst. The findings highlight the need of early, multidisciplinary, and structured behavioural interventions in children with complex comorbid developmental conditions especially in low-resource environments. The current case case is one of the few cases in the region to be recorded on ASD with neurological comorbidities with holding of standardized developmental tools.

Keywords: *Autism Spectrum Disorder, Cerebral Palsy, Intellectual Disability, Developmental Delay, Behavioural Intervention*

INTRODUCTION

ASD is a neurodevelopmental disorder that is defined by perennial impairments in social interaction and communication, as well as limited and monotonous behavioural patterns, interests, or activities (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision, 2022). Autistic children tend to have problems with maintaining eye contact, responding to their names, interacting with their peers and/or showing age-related communication skills. ASD has already been identified as an important public health issue throughout the world because of its early onset and chronic effects on social, academic, and adaptive functioning (World Health Organization [WHO], 2023). Studies show that about 30-50 percent of ASD children also experience co-occurring intellectual disability, which also worsens the developmental outcomes and intervention planning (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision, 2022).Another neurodevelopmental disorder is cerebral palsy (CP), which mainly impacts movement, posture, and coordination of muscles because of brain damage in early brain or abnormally developed brain (Centers for Disease Control and Prevention, 2023). Diplegic cerebral palsy children tend to exhibit considerable motor deficits that can disrupt their exploration of the

surrounding world as well as the process of communicating and socializing. In the case of ASD and CP and intellectual disability, it is difficult to assess the core symptoms of autism due to the fact that the motor and sensory impairments may obscure or resemble the symptoms of core autism. This coincidence results in a complicated mental image that needs thorough psychological assessment and organized treatment.

The research problem that may be considered in this study is the challenge with the precise evaluation and treatment of children who present with numerous neurodevelopmental difficulties, especially with low-resource environments where access to multidisciplinary services can be limited. The literature on ASD comorbid to cerebral palsy in South Asian settings is scanty with limited case-based literature that provides the use of standardized developmental assessment measures. This discontinuity can result in late diagnosis, improper intervention planning and poor outcomes in the long run.

This case study was done owing to the necessity to give systematic clinical records of a child who came with severe developmental delays, neurological abnormalities, and behavioural difficulties. This study will show evidence based practice in a clinical training setting by applying a systematic evaluation of the child with the help of standardized instruments and introducing an individualized behavioural management plan.

The aims of this case report are as follows: (1) to carry out a complex psychological examination of a child with suspected ASD and intellectual disability in the conditions of cerebral palsy; (2) to identify the level of autism symptoms and developmental functioning in the child with the help of standardized measures; (3) to plan and provide a specific behavioural intervention program; and (4) to assess the short-term consequences of the therapeutic intervention. With the help of these goals, the study is aimed at making contributions to the clinical knowledge and enhancing the intervention strategy in cases of children with complex neurodevelopmental comorbid conditions.

LITERATURE REVIEW

Autism Spectrum Disorder (ASD) is a type of neurodevelopmental disorder that presents with permanent impairments in social communication and limited, repetitive behaviours (American Psychiatric Association [APA], 2022). According to recent epidemiological updates, the rates of ASD identification are getting higher all over the world, and early screening and intervention should be considered of paramount importance (Centers for Disease Control and Prevention [CDC], 2025). Studies have continuously demonstrated that intellectual disability (ID) often co-exists with ASD especially when there are severe developmental delays which result in increased functional impairment and increased support needs (Salehi et al., 2025). As compared to the general population, children with cerebral palsy (CP) are at a much greater risk of developing ASD, which implies that there are common neurodevelopmental mechanisms (Chen et al., 2024). Researchers have shown that patients experiencing comorbid CP and ASD exhibit more functional impairments, especially in communication and adaptive behaviour (Casseus et al., 2024). Since motor dysfunctions may obscure, or complicate, behavioural evaluation, special diagnostic instruments are highly suggested in complicated situations (Viswanath et al., 2023). The Childhood Autism Rating Scale-Second Edition (CARS-2) has proved to have fair reliability and validity irrespective of different cultural contexts and is deemed a convenient tool to use in case of measuring the severity of autism in cases where a multidisciplinary assessment might not be viable (Alotaibi et al., 2021; Ji et al., 2023).

The use of standardised behavioural observation tools in children with poor speech and physical disability will minimise the problems of diagnostic overshawing and enhance clinical clarity. It is common to report self-injurious behaviour and repetitive motor actions in children with ASD and intellectual disability,

especially in cases where there is a lack of communication and sensory processing problems (Vandewalle et al., 2021). Reinforcement-based behavioural interventions and involvement of caregivers are also evidence-based strategies of minimizing challenging behaviours and enhancing engagement (Labarca et al., 2025). Developmental delays and cognitive impairment are connected to neurological abnormalities, including ventriculomegaly and arachnoid cysts, as this confirms the need to monitor the development of such cases comprehensively (Adolfsson et al., 2024; Li et al., 2025). Although there exists an increasing body of literature internationally, there is still scarce documentation of ASD comorbid with cerebral palsy and intellectual disability in South Asian settings using normal developmental instruments. Thus, the current case will be useful in adding to the clinical literature in the area, as it will offer a systematic recording of the results of the assessment and behavioural management in a child with neurodevelopmental comorbidity.

METHOD

Research Design

The research design used in this study was a single case study design in order to perform a detailed assessment and behavioural intervention of a child with complex neurodevelopmental comorbidity. The case study design was chosen due to the possibility of looking into behavioural patterns, the functioning of development, and the result of interventions in the actual clinical conditions. Considering the Autism Spectrum Disorder (ASD), cerebral palsy, and intellectual impairment, a specialized and thorough evaluation plan proved to be more suitable in comparison to group-based approaches. The design assisted with continuous observation, systematic plans of intervention and post-therapy comparison of behavioural changes during the sessions.

Participant

The respondent, whose identity will be kept confidential, is a 5-year-old boy who is the third child in a joint family set up. He lives together with both parents and siblings in a collective living setting. The assessment was conducted when the child had been enrolled in a special education institute. He had suffered severe developmental delays, poor eye contact, self-harm (banging head, biting hands), no response to name, repetitive body movements (rocking), irritable, gross and fine motor impairment as a result of diagnosing diplegic cerebral palsy. Neurological abnormalities have been ventriculomegaly and arachnoid cyst, which played a role in his development. Parental permission was taken before assessment and intervention was done.

Assessment Tools

A multi-method assessment strategy was adopted to obtain comprehensive clinical understanding.

Clinical Interview

An unstructured clinical interview was conducted with the parents and teacher to gather detailed developmental, medical, educational, psychosocial, and behavioural history. This facilitated case formulation and identification of maintaining and protective factors.

Behavioural Observation

Direct observation was carried out across multiple sessions in both structured and semi-structured settings. The child's eye contact, responsiveness, motor functioning, repetitive behaviours, and emotional regulation were systematically noted.

DSM-5-TR Diagnostic Checklist

Diagnostic criteria were reviewed to determine the presence of persistent deficits in social communication and restricted, repetitive patterns of behaviour consistent with Autism Spectrum Disorder. Criteria for Unspecified Intellectual Disability were also considered due to severe global developmental delay.

Portage Guide to Early Education (PGEE)

The PGEE was administered to assess developmental functioning across five domains: socialization, language, self-help, cognition, and motor skills. Functional age levels were determined based on caregiver report and observation.

Childhood Autism Rating Scale – Second Edition (CARS-2)

CARS-2 was used to assess the severity of autism symptoms through structured behavioural rating across multiple domains.

Subjective Rating Scale

A teacher-based severity rating scale (0–10) was used to measure baseline severity of target behaviours and to evaluate post-intervention changes.

Procedure

A total of 30 therapy sessions were conducted.

Sessions 1–6
Initial sessions focused on rapport building, baseline behavioural observation, reinforcement identification, and detailed history taking. The therapist introduced preferred toys (rattle and light-up toys) to establish engagement and observe responsiveness.

Sessions 7–9
Standardized assessments were administered. PGEE was conducted to determine developmental functioning, followed by CARS-2 administration to evaluate autism severity. Results were analyzed, and an Individualized Educational Plan (IEP) was formulated based on identified deficits.

Sessions 10–28
Behavioural intervention was implemented according to IEP goals. Intervention targeted improvement in eye contact, reduction in self-injurious behaviour, enhancement of fine motor engagement, and increased social responsiveness.

Techniques included

- **Positive Reinforcement:** Preferred tangible items (rattle toy, light-up toy) were provided contingent upon desired behaviours such as brief eye contact or task completion.
- **Physical Prompting:** Hand-over-hand assistance was used during structured tasks such as ring tower activities and object transfer tasks.
- **Structured Play:** Activities such as peek-a-boo, simple imitation tasks, and sensory play were introduced to enhance engagement and social interaction.
- **Sensory Engagement:** Controlled exposure to sensory materials (playdough, textured objects) was used to reduce repetitive behaviours and increase task focus.
- **Parent Psychoeducation:** Parents were guided regarding reinforcement strategies, structured routines, behavioural consistency, and realistic expectations considering motor limitations.

Sessions 29–30

Termination phase included post-intervention subjective ratings, progress review, parental feedback, and recommendations for continued therapy (speech therapy, sensory integration therapy, and follow-up psychological sessions).

Pre- and post-intervention comparisons were used to evaluate behavioural changes, particularly in self-injurious behaviour, irritability, eye contact, and fine motor participation.

RESULTS

Developmental Assessment (PGEE)

Functional age ranged between 1–2 months, indicating severe developmental delay across:

- Self-help
- Motor
- Language
- Socialization
- Cognitive skills

Autism Severity (CARS)

Total Raw Score

39

Category

Severe Autism Spectrum Disorder

Pre-Post Ratings

Table 1

Problems	Pre	Post
Cannot sit without support	7	7
Cannot grab a pencil with hands	9	8
Self-injurious behavior	9	7
Cries a lot and his behavior is always irritable	9	8
Very minimal eye contact	9	8
Does not respond to name	9	8
Body rocking	9	8
Head banging	9	8

DISCUSSION

The results of the current case report demonstrate the difficulty of evaluation and treatment of a child with Autism Spectrum Disorder (ASD) and comorbid with diplegic cerebral palsy and unspecified intellectual disability. The developmental picture drawn using the Portage Guide to Early Education demonstrated that all aspects experienced severe developmental delays, with the level of functioning at a significant age below the chronological one. Childhood Autism Rating Scale (CARS-2) also supported severe autism symptomatology, which is also in line with long-term impaired social communication and limited, repetitive behavioural patterns. The fact that there was a cerebral palsy further complicated both the diagnosis and the intervention.

The motor impairment restricted the child to explore the surrounding environment, to participate in organized activities and to be functionally independent. Earlier accounts suggest that children with co-occurring ASD and cerebral palsy have worse functional impairments than their counterparts with either of the two conditions (Chen et al., 2024; Casseus et al., 2024). These results of the current case are consistent with this literature because gross motor gains were not significant in the case of behavioural intervention. Among the most clinically troubling symptoms, there was self-injury behaviour such as banging head and biting hands. According to research, self-injury among children with ASD is commonly linked to communication loss, sensory maladjustment, and emotional exasperation (Vandewalle et al., 2021). Behavioural interventions that involve positive reinforcement and structured sensory activities, in this instance, led to mild decreases in self-injurious behaviour and irritability and endorsed the utility of behaviour-targeted interventions in serious manifestations. The global developmental delays were probably caused by the occurrence of neurological cases, such as, ventriculomegaly and arachnoid cyst. New findings indicate that the structural brain abnormalities are linked to the high risk of neurodevelopmental impairment and cognitive delay (Adolfsson et al., 2024).

All these medical factors, along with the socioeconomic limitations, could have ensured the persistence of the severity of impairment. The child was brought up in a collectivist environment and in a joint family setup in terms of culture. Although the family support was used as a protective factor, parental education level and adherence to systematic intervention could have been factors that affected developmental outcomes. These results highlight the value of psychoeducation and regular behavioural management of the caregivers at home. On the whole, these findings allow endorsing the hypothesis that organised behavioural interventions can achieve quantifiable engagement and maladaptive behaviour reduction even in medically complex participants, but these functional improvements may be limited by motor constraints.

CONCLUSION

To sum up, this case report shows that Autism Spectrum Disorder that is comorbid with cerebral palsy and intellectual disability has serious diagnostic and therapeutic issues. Extensive evaluation like PGEE and CARS-2 standardized tools played a crucial role in the clear understanding of the level of developmental and the severity of autism. Reinforcement, prompts and structured play were utilised in behavioural interventions that showed mild improvement on self-injury behaviour and social interaction. Nevertheless, gross motor functioning was not altered much because of underlying neurological impairment.The case adds to the scanty clinical literature on South Asian settings and highlights the importance of multidisciplinary, culture-sensitive, and early interventions in complicated neurodevelopmental cases.

LIMITATIONS

The case study has its weaknesses since it is based on a single-case design, which limits the generalizability of results. It is possible that a short period of intervention (30 sessions), does not represent the long-term therapeutic outcomes. Subjective teacher ratings were used in the measurement of behaviour improvement, and they can foster the bias of the observer. Moreover, it was also limited by extreme motor impairment that could not examine some of the adaptive skills correctly. No long-term follow-up information is also limiting the assessment of long-term intervention effects.

RECOMMENDATIONS

It is important that future studies to be conducted should incorporate longitudinal follow-up designs to investigate the long-term developmental outcome in children with ASD and cerebral palsy. Future research on the issue in South Asia should use larger sample based studies to enhance generalizability. The use of multidisciplinary strategies, including neurologists, speech therapists, occupational therapists, and psychologists, can be beneficial to the effectiveness of the intervention. There is also need to conduct further studies on the model of caregiver training in order to enhance consistency of behavioural management in the home setting.

GENERAL IMPLICATIONS

This case highlights the significance of screening of children with cerebral palsy at an early age to identify autism characteristics in children with the condition. Learning institutions ought to embrace systematic Individualized Educational Plans (IEPs) that are specific to children with various developmental difficulties. Stigma and lack of early intervention can be minimized through heightened awareness in the Pakistani society about neurodevelopmental disorders. Another result of the study is the necessity to have easy to access and affordable behavioural intervention models in resource strained environments.

CLINICAL IMPLICATIONS

When clinicians deal with children who present with motor impairments, they ought to be keen to identify the presence of co-occurring symptoms of autism in order to prevent diagnostic overshadowing. Even in extreme cases of developmental presentation, behavioural therapy methods can be effectively employed such as positive reinforcement and structured play. The psychoeducation of parents is also essential so that the behaviours learned during therapy could be generalized outside the therapy session. The cognitive-behavioural and behaviour-modification strategies are supposed to be suitably modified in relation to the level of development and physical abilities of the child. Communication skills, sensory integration, and self-regulation intervention strategies can be used to reduce long-term disability, to enhance the quality of life in early intervention programs.

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