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Autism Spectrum and Neurodevelopmental Disorders in Early Childhood: Experience of the Child and Adolescent Psychiatry Unit of Casablanca

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Abstract	Original Research Article

Since 2012, when the juvenile psychiatry unit of Casablanca was created, children and adolescents in psychological distress or suffering from psychiatric disorders are cared for by a multidisciplinary team. The Early Childhood Unit (ECU) receives children from 0 to 6 years old, requiring a diagnostic assessment and/or therapeutic care. Objective: The aim of our study was to describe the profile of patients with a diagnosis of neurodevelopmental disorder (NDD); autism spectrum disorder (ASD) among others. Patients and Methods: We conducted a descriptive study including all children hospitalized at the ECU, in the child psychiatry department of the University Hospital of Casablanca, from January 1, 2012 to December 31, 2019. A descriptive analysis of sociodemographic, clinical and care arrangements have been made. Results: A total of 135 children were included in the study, 83% of them were boys. The mean age during hospitalization was 3.4 years. Consanguinity was found in 8.7% of cases. All the children were admitted on a part-time basis: day hospital, with an average of 71 days. The period between the parents' first concerns and the beginning of follow-up was 10 months, and the average age at diagnosis was 44 months. The main diagnoses made were autism spectrum disorder (ASD) 55.5% and Global Developmental Delay (GDD) 20.1%. Our descriptive results are comparable to those of the literature, and are preliminary to future studies on the involvement of certain risk factors in the occurrence of NDDs.
Keywords: Early childhood – neurodevelopmental disorders – autism spectrum disorder – risk factors.

1. INTRODUCTION

Psychology of development has benefited from various contributions, and broadened knowledge from the perinatal period to adolescence. As a matter of fact, neurosciences, psychoanalysis, functional imagery; have contributed to a better understanding of the psychological and psychiatric disorders of children and adolescents [1].

Neurodevelopmental Disorders (NDDs) as we know them today, are a group of conditions that begin during the developmental period, and typically manifest early, often even before the child begins schooling. They are characterized by developmental deficits that result in impaired personal, social, academic, or occupational functioning.

According to the DSM 5 [2], classification of the American Psychiatric Association, this entity includes several pathologies, highlighted in Figure 1.

These disorders have an important place in the pathology of early childhood and their prevalence varies (1% for intellectual disability and ASD, and 5% for ADHD) [3].

According to our experience, the need of mental healthcare amongst children and adolescents is currently increasing in Morocco.

The early childhood unit (ECU) - Child and adolescent psychiatry department of Casablanca - is the first hospitalization unit set up in Morocco and dedicated to children from birth to 6 years old.

Children suffering from psychological difficulties and NDDs, are admitted for the diagnosis and / or care purposes.

Few studies have focused on the epidemiological profile of these children, hence the interest of our study.
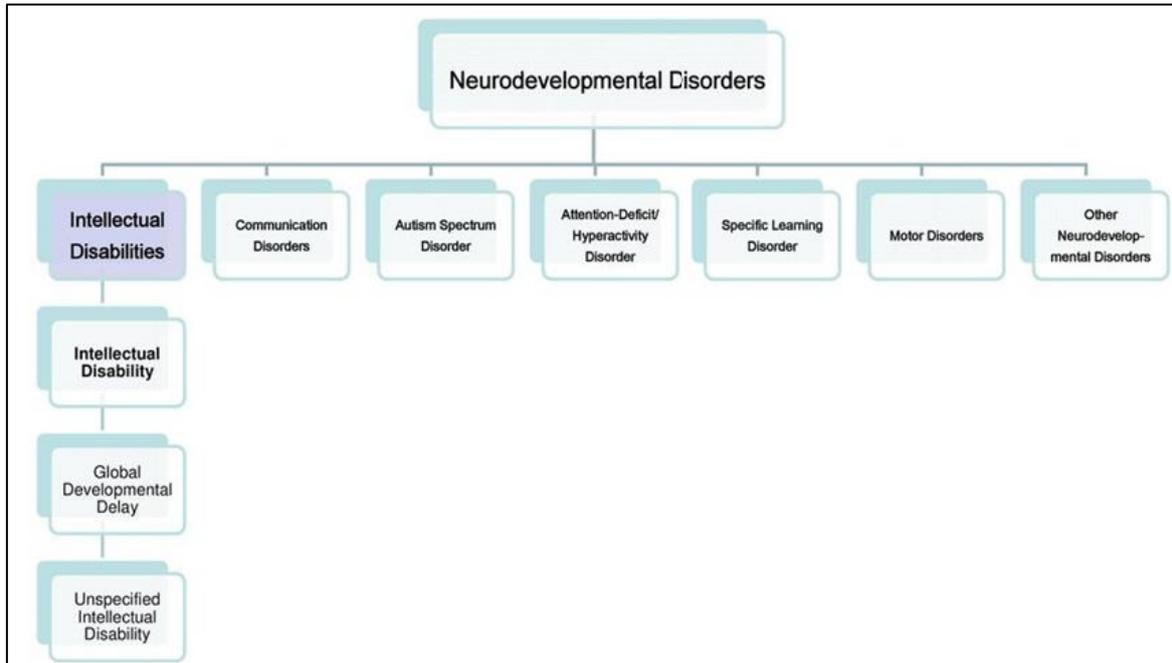
Figure 1: Neurodevelopmental disorders according to DSM 5

Early Childhood Unit of Abderrahim El Harouchi Mother-Child Hospital:

The ECU project, has been developed in 2012, within the broader framework of development of juvenile psychiatry. It is located in the child and adolescent psychiatry department in Abderrahim El Harouchi Mother-Child Hospital.

The unit opened its doors in January 2012. Its capacity is: 4 beds and 2 cribs.

The team is multidisciplinary, consisting of: child psychiatrist professor, resident medical doctors in child psychiatry, psychologist, nurses, speech therapist, and psychomotor therapist.

Altogether work in collaboration to establish a diagnosis for each patient, initiate hospital care, and offer parents a personalized therapeutic plan upon discharge.

2. PATIENTS AND METHODS

We conducted a retrospective cross-sectional study on files, with a descriptive aim. All children aged 0 to 6 years, admitted to the unit from January 1, 2012 to December 31 2019, with a diagnosis of NDD, were included.

The data was collected using a pre-established exploitation sheet covering several chapters, such as: socio-demographic data of the children and parents, clinical data resulting from the multidisciplinary evaluation, personal and family history, as well as the therapeutic project.

The descriptive analysis was carried out by calculating means and standard deviations for quantitative variables, calculating percentages for qualitative variables.

3. RESULTS

3.1. Sociodemographic and clinical characteristics of patients

135 children were included, 83% of them were male. The average age was 3.4 years with a standard deviation of 1.11 and extreme values of 1 to 6 years.

Concerning the sibling rank, in 43% of the cases, the patient was the eldest, and in the third of the cases the patient was the second child (42.3%) (Figure 2).
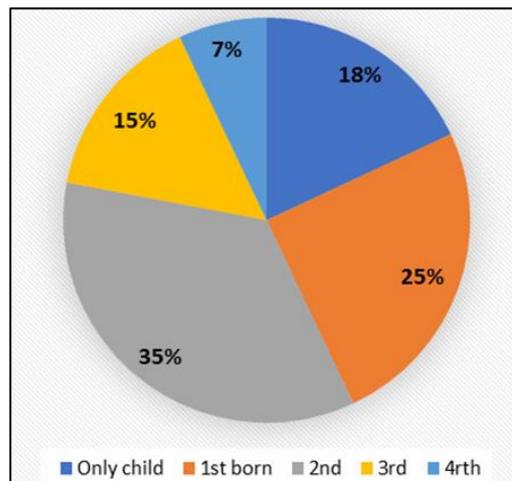

Figure 2: Sibling rank in our sample

As for the history, 7.6% of hospitalized children had prenatal history. For example, the threat of premature labor was found in 3.7% of cases.

Perinatal history was found in 17.3% of patients with 12.6% of perinatal asphyxia cases.

In addition, 60.7% had a postnatal history of which 4.4% was gastroesophageal reflux. The same percentage was found for history of respiratory illnesses such as asthma or respiratory infections.

The patient's average age when first concerns of parents occurred, was 24 months. And their average age at the start of follow-up was 34 months.

Subsequently, we found an average period between the first concerns and the first consultation of: 10 months.

Also, the mean age at diagnosis was 44 months with a standard deviation of 13.14.

Besides, overexposure to screens for (more than 8 hours a day) was noted in more than half of the cases (59%). The average length of this daily exposure was 24 months, with a standard deviation of 15.97.

Early interactions between the child and its caregiver/mother, were qualified as good by parents in 54% of cases, while the notion of early separation was found in 30% of cases.

In addition, consanguinity was found in 8.7% of cases, and half was 1st degree.

3.2. Sociodemographic and clinical characteristics of parents

The patient's social context was also investigated. The socio-economic level of our sample was average in 80% of cases. And the majority (92%) of the patients lived with both parents.

As part a complete clinical and therapeutical approach, 70.8% of the parents had benefited from parent-child psychotherapy in the unit. And 16.7% had been referred for specialized psychiatric care for depressive and/ or anxiety signs.

3.3. Characteristics of hospitalization

All the patients were admitted to day hospital, some had been hospitalized several times. On average, the length of hospital stay was 71 days, ranging from 1 day to several months.

In 62% of cases, the children were referred by pediatricians. The main reason for referral was a request for a diagnostic evaluation (94%).

All the children had benefited from a multidisciplinary assessment by the ECU team.

The majority had benefited from the passing of standardized scales according to the clinical features; such as: ADI: Autism Diagnostic Interview; CARS: Childhood Autism Rating Scale; and ADOS: Autism Diagnostic Observation Schedule [4-7].

Diagnoses were made according to the DSM classification and its recent updates [3].

The main diagnoses made at the end of the hospitalization were: autism spectrum disorder (ASD) and global developmental delay (GDD). The diagnoses will be exposed in the following figure (Figure 3).
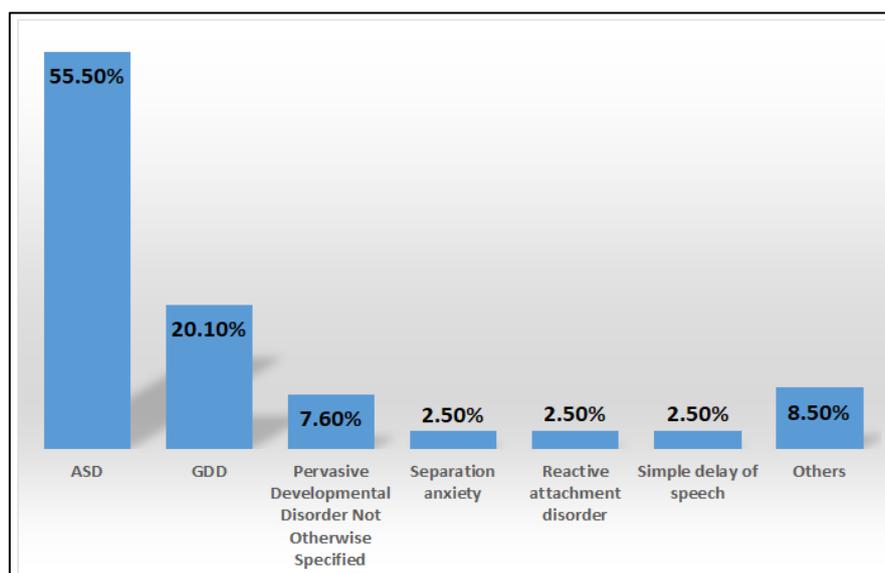

Figure 3: Patients' main diagnoses

It should be noted that GDD is a diagnosis reserved for individuals under 5 years of age when the degree of severity of the intellectual dysfunction cannot be assessed with certainty during early childhood.

Also, PDD, pervasive developmental disorder not otherwise specified was made as a diagnosis before the last revision of the DSM.

Regarding the educational project, 74.6% of children of school age were placed or maintained in ordinary school with the implementation of specific school facilities for 75% of them.

The use of prescription drugs was found in 10% of cases. And Risperidone was the most prescribed molecule (70%).

4. DISCUSSION

This retrospective work allows us to identify the clinical profile of children referred to the ECU. Our population was male mainly (83%) with a sex ratio of 5/1.

This goes with the literature, since boys are 2 to 4 times more likely to develop a neurodevelopmental disorder [8].

In nearly 43% of cases, the hospitalized patient was an only child, and in a third of cases the child was the second of the siblings.

This result was also found in the studies by Le Galudec [9] and Charfi [10] which evaluated requests for care in child psychiatry consultation respectively at the University Hospital of Brest and at the Razi University Psychiatric Hospital in Tunis.

As shown in our results, ASD was the most common diagnosis in patients included in our study.

For the parents of these patients, the average age at the onset of the first concerns was 24 months, and the average age at the start of follow-up was 34 months.

This period of 10 months, between the first symptoms and the first consultation, is noteworthy. It induced a delay in diagnosis and care.

We know that the World Health Organization insists on the identification of alert signs by front-line professionals. Indeed, parental concerns evoking a developmental difficulty in their child are considered as such. And referral to a child psychiatrist or neuropediatrician is, then, required [11].

Results similar to ours were found in a study by Christensen et al. This study was carried out in 2012 on 5063 children suffering from ASD, which had found an average age of diagnosis was 46 months [12].

This delay could be due to the lack of awareness and training among professionals, parents and teachers. The people in close contact with the child could identify the early signs of NDDs, particularly ASD, and initiate a first contact with professionals as early as possible.

Regarding pharmacological treatment, Risperidone has been shown to improve sensorimotor functioning and reduce stereotyped behavior, irritability and aggression in children with ASD. On the other hand, no significant improvement in social interactions or language has been proven [13, 14].

In our case, this same molecule was the most prescribed. Despite their effectiveness on certain symptoms, classic antipsychotics have been replaced by atypical antipsychotics, due to their multiple side effects [15, 16].

Before the patient is discharged, an educational project is suggested to the parents. Our results find a rate of nearly 75% of inclusive schooling, corresponding to UNESCO recommendations.

In Morocco, since 2019, the national program of inclusive education for the benefit of children with disabilities has been officially adopted.

Its main goal was to ensure greater equity in access to schooling for these children [17-20].

The majority of our patients were diagnosed with ASD, a diagnosis requiring psychological support for the caregivers/parents since the announcement and throughout the personalized care.

Indeed, many studies have showed psychiatric and/or psychological morbidity in parents/caregivers of children with ASD, as well as an impaired quality of life compared to the general population [21, 22].

Also, a high frequency of psychological distress and psychiatric disorders in parents of children with NDDs in general, has been proven in other studies [23, 23].

This only confirms the advantage of mental health assessment for patients' caregivers / parents and suitable help.

This present study was limited by its retrospective nature. Actually, the precision of the risk factors of TND was lacking in certain files, and couldn't be included in our statistical analysis.

These factors have been studied extensively, and it is currently established that the appearance of a NDDs is multifactorial, with a part of genetics and a part of the environment [24, 25].

This could be an opening for a future prospective study in our field exploring the prevalence of these risk factors in the clinical population.

5. CONCLUSIONS

The early childhood unit (ECU) welcomes children from 0 to 6 years old, with psychological difficulties, mainly neurodevelopmental disorders, in a day hospital.

This present study highlights the existence of a significant delay between the onset of symptoms and access to the healthcare system, and therefore a failure of the early detection system. Leading to a delay in diagnosis and specialized care.

The generalization of awareness programs amid general population, and training of early childhood professionals are necessary.

The aim would be to follow current recommendations for early and very early screening of NDDs, targeted towards vulnerable or at-risk population.

REFERENCES

1. Coq, J. M., & Gerardin, P. (2021). Développement psychologique de l'enfant. Journal de pédiatrie et de pouericulture. Elsevier.
2. Diagnostic and statistical manual of mental disorders: DSM-5-TR. (American Psychiatric Association Publishing, 2022).
3. Mullin, A. P., Gokhale, A., Moreno-De-Luca, A., Sanyal, S., Waddington, J. L., & Faundez, V. (2013). Neurodevelopmental disorders: mechanisms and boundary definitions from genomes, interactomes and proteomes. *Translational psychiatry*, *3*(12), e329-e329.
4. Guédeney, A., Charron, J., Delour, M., & Fermanian, J. (2001). L'évaluation du comportement de retrait relationnel du jeune enfant lors de l'examen pédiatrique par l'échelle d'alarme détresse bébé (adbb). *La psychiatrie de l'enfant*, *44*(1), 211-231.
5. Rutter, M., Le Couteur, A., & Lord, C. (2013). ADI-R: Autism diagnostic interview revised: manual. (Western Psychological Services).
6. Schopler, E., Reichler, R. J., & Renner, B. R. (1986). The childhood autism rating scale (CARS): for diagnostic screening and classification of autism. (Irvington).
7. Lord, C., Rutter, M., & DiLavore, P. C., & Risi, S. (2014). Autism Diagnostic Observation Schedule ADOS 2 Manual Ring-bound.
8. May, T., Adesina, I., McGillivray, J., & Rinehart, N. J. (2019). Sex differences in neurodevelopmental disorders. *Current opinion in neurology*, *32*(4), 622-626.
9. Le Galudec, M., Richard, Y., Saint-André, S., Garlantézec, R., & Lazartigues, A. (2011). Les demandes de consultation en pédopsychiatrie: etude descriptive sur cinq années dans un service universitaire. *Neuropsychiatrie de l'enfance et de l'adolescence*, *59*(1), 1-7.
10. Charfi, F., Fakhfakh, R., Hadhri, I., Harrathi, A., Belhadj, A., Halayem, M. B., & Bouden, A. (2015). Profil sociodémographique et clinique d'une population de consultants dans un service universitaire de pédopsychiatrie de la Tunisie. *Neuropsychiatrie de l'Enfance et de l'Adolescence*, *63*(2), 116-123.
11. OMS, Organisation mondiale de la santé. Fiche de recommandations pour les professionnels de première ligne. Dépistage et diagnostic de l'autisme.
12. Christensen, D. L., Braun, K. V. N., Baio, J., Bilder, D., Charles, J., Constantino, J. N., ... & Yeargin-Allsopp, M. (2018). Prevalence and characteristics of autism spectrum disorder among children aged 8 years—autism and developmental disabilities monitoring network, 11 sites, United States, 2012. *MMWR Surveillance Summaries*, *65*(13), 1.
13. Hunsinger, D. M., Nguyen, T., Zebraski, S. E., & Raffa, R. B. (2000). Is there a basis for novel pharmacotherapy of autism?. *Life Sciences*, *67*(14), 1667-1682.
14. McCracken, J. T., McGough, J., Shah, B., Cronin, P., Hong, D., Aman, M. G., ... & McMahon, D. (2002). Risperidone in children with autism and serious behavioral problems. *New England journal of medicine*, *347*(5), 314-321.
15. Matson, J. L., & Dempsey, T. (2008). Autism spectrum disorders: Pharmacotherapy for challenging behaviors. *Journal of Developmental and Physical Disabilities*, *20*(2), 175-191.
16. Gerlai, R., & Gerlai, J. (2004). Autism: a target of pharmacotherapies?. *Drug discovery today*, *9*(8), 366-374.
17. UNESCO. TESSA. (2015). Un guide pour la formation des enseignants en éducation inclusive au Togo.
18. The Salamanca Statement and Framework for Action on Special Needs Education. (1994). Adopted by the World Conference on Special Needs Education: Access and Quality.
19. An, Z. G., Hu, X., & Horn, E. (2018). Chinese inclusive education: The past, present, and future. *Intervention in school and clinic*, *54*(2), 118-122.

20. Runswick-Cole, K. (2011). Time to end the bias towards inclusive education?. *British Journal of Special Education*, *38*(3), 112-119.

21. Almansour, M. A., Alateeq, M. A., Alzahrani, M. K., Algeffari, M. A., & Alhomaidan, H. T. (2013). Depression and anxiety among parents and caregivers of autistic spectral disorder children. *Neurosciences Journal*, *18*(1), 58-63.

22. Dey, M., Castro, R. P., Haug, S., & Schaub, M. P. (2019). Quality of life of parents of mentally-ill children: a systematic review and meta-analysis. *Epidemiology and psychiatric sciences*, *28*(5), 563-577.

23. Vasilopoulou, E., & Nisbet, J. (2016). The quality of life of parents of children with autism spectrum disorder: A systematic review. *Research in Autism Spectrum Disorders*, *23*, 36-49.

24. Martin, J., Taylor, M. J., & Lichtenstein, P. (2018). Assessing the evidence for shared genetic risks across psychiatric disorders and traits. *Psychological medicine*, *48*(11), 1759-1774.

25. Taylor, M. J., Martin, J., Lu, Y., Brikell, I., Lundström, S., Larsson, H., & Lichtenstein, P. (2019). Association of genetic risk factors for psychiatric disorders and traits of these disorders in a Swedish population twin sample. *JAMA psychiatry*, *76*(3), 280-289.