Epidemiological and Clinical Aspects of Autism Spectrum Disorders in Congo

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Abstract

Introduction: Autism spectrum disorders (ASD) are a public health issue due to their increasing frequency and their impact on social and relational integration. The objective was to study the epidemiological and clinical aspects of ASD in Congo. **Methodology:** It was from a prospective cohort study conducted at the neurocognitive exploration unit of the CHU-B over a period of 21 months. It concerned patients with ASD aged 3 to 16 years. Their diagnosis was made according to the DSM-V criteria. **Results:** The frequency of ASD was high (55.6%). These were dominated by childhood autism (84.9%). The mean age of onset of signs was 16.1 ± 5.2 months and that of diagnosis was 7.1 ± 2.9 years. ASD was associated with intellectual disability (75.5%) and eating disorders (48.8%). Another neurodevelopmental disorder was found in all patients: intellectual disability (75.5%), learning disabilities (75.5%) and ADHD (32.1%). Psychiatric disorders (79.2%) and neurological disorders (70.8%) were the comorbidities associated with ASD. **Conclusion:** The frequency of ASD in Congo, although underestimated, is high, dominated by childhood autism with a delay in the recognition of signs by parents. They are often associated with a learning disability and ADHD. Hence, the need for parental awareness and early screening of ASD in schools in order to facilitate socio-relational integration.

Keywords

Autism Spectrum Disorders, Neurocognition, Congo

1. Introduction

Autism spectrum disorders (ASD) are early neurodevelopmental disorders [2]. Their definition includes an autistic triad combining: persistent deficits in communication and social interaction as well as restricted, repetitive behaviors, interests or activities [1]. The exact cause of ASD is not known. However, genetic and environmental factors have been implicated [2].

ASDs most often manifest during early childhood and then persist throughout life. Boys are affected 3 to 4 times more than girls [3]-[6]. Worldwide, the most recent studies estimate that the prevalence of ASDs varies between 90 and 120 individuals per 10,000 inhabitants [7] [8]. The constant increase in this prevalence worldwide has generated significant interest in these disorders [7]. In developed countries, they have been recognized for around fifteen years as a public health problem [9].

In Africa, few studies have been conducted specifically on ASD. Their estimated hospital frequency is between 2.3% and 7.8% [10] [11].

In Congo, no studies have been conducted in this context, and there is currently no structure dedicated specifically to the care of ASD. This raises interest in the issue of ASD care in Congo.

This is how we conduct this study with the aim of describing the sociodemographic and clinical profile of ASD.

2. Methodology

This was a prospective cohort study, conducted from January 1, 2021 to September 30, 2022, a period of 21 months, carried out at the only neurocognitive exploration unit in Congo, located in the neurology department of the University Hospital of Brazzaville (CHU-B), which is the largest and also the most versatile in the country. It is located in the department of Brazzaville. As such, it welcomes patients from all other departments of Congo.

The study included patients:

- aged 2 to 16 years;
- presenting an ASD confirmed by standardized diagnostic tests;
- whose parents and/or legal guardian had consented to participate in the study.
  The following patients were not included in our study:
- ASD having benefited from initial care before our study;
- having a sensory or motor deficit not explained by ASD;
  The data was collected on a survey sheet pre-established including the data:
- sociodemographic, anamnestic after interview with the parents of autistic patients;
- on the neurocognitive assessment of ASD carried out by diagnostic tools: DSM-5 and CARS;
- on the assessment of intelligence quotient (IQ) carried out by the Wechsler Intelligence Scale or WISC-5;
  The severity of the disorder is based on the extent of social communication def-

icits and restricted and repetitive behavioral patterns. It is coded into three levels (according to the DSM-5):

- Level 1 requiring assistance (mild form);
- Level 2 requiring significant assistance (moderate form);
- Level 3 requiring very significant assistance (severe form).

The Childhood Autism Rating Scale (CARS) is a tool specifically designed to detect autism by discriminating from other behavioral disorders in children and capturing only autistic traits, based on 15 behavioral items. It includes both an interview with the family and an observation of the child's behavior. It is applicable to all ages, including preschool.

Data were entered and processed using Excel software and statistical analysis using SPSS version 23.0 software.

3. Results

The study population consisted of 250 patients with neurodevelopmental disorders, of whom 139 (55.6%) had a diagnosis of ASD, among whom 106 (76.3%) patients met our inclusion criteria.

The overall frequency of ASD in the neurocognitive exploration unit of CHU-B was therefore 55.6%. The frequency of the type of ASD: 90 (84.9%) patients had childhood autism and 16 (15.1%) atypical autism.

3.1. Sociodemographic Characteristics

The mean age of the patients was 7.1 ± 2.9 years with the extremes aged 3 to 16. There were 86 (81.1%) boys and 20 (18.9%) girls, a *sex ratio* of 4.3.

Thirty-nine patients (36.8%) were in the age group of [0 - 5] years, 56 (52.8%) patients of [6 - 10] years and 11 (10.4%) patients of [11 - 16] years.

The distribution of patients according to sibling rank is presented in Table 1.

Table 1. Distribution of patients according to sibling rank.

	Effective	Percentage
First born	39	36.8
Latest born	38	35.8
Middle rank	29	27.4

The distribution of patients according to the educational and socioeconomic level of the parents is presented in Table 2.

Seventy-nine (74.5%) parents cohabited together and 27 (25.5%) did not cohabit.

3.2. Clinical Characteristics

The distribution of patients according to perinatal history is presented in Table 3.

The delay in patient acquisitions was: 74.2% and the regression was: 28.3%.

The mean age of delayed acquisition was 16.1 ± 5.2 months with the extremes

of 6 months and 24 months.

Distribution of patients by age the delay in acquisitions is illustrated in **Figure 1**.

Table 2. Distribution of patients according to the educational and socioeconomic level of the parents.

	Effective	Percentage
Father's education level		
Superior	94	88.7
Secondary	12	11.3
Mother's education level		
Superior	61	57, 6
Secondary	45	42, 4
Socioeconomic level		
Down	10	9.4
AVERAGE	88	83.0
Superior	8	7.6

Table 3. Distribution of patients according to perinatal history.

	Staff	Percentage
EAI*	18	17.0
Prematurity	3	2.8
Neonatal meningitis	2	1.9
None	83	78.3

*EAI = Anoxic-ischemic ephedrine encephalopathy.
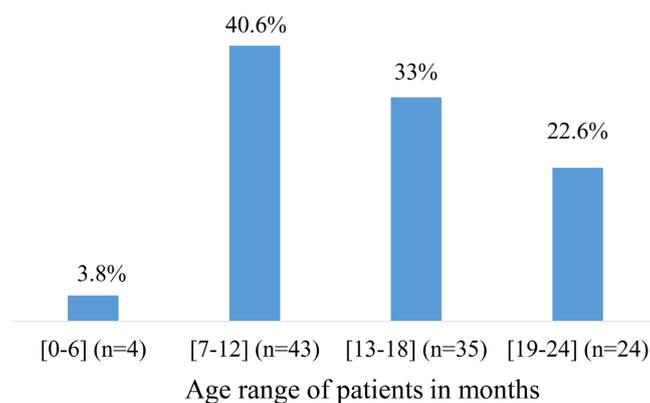
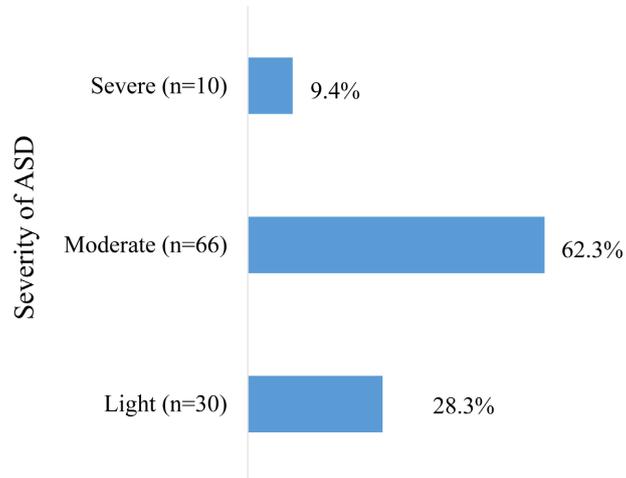**Figure 1.** Distribution of patients according to age of delayed acquisition of ASD.

3.3. Severity of ASD

The distribution of patients according to ASD severity is illustrated in **Figure 2**.

At least one other neurodevelopmental disorder was found in all patients. The

different disorders found were: intellectual disability, learning disability and ADHD.

Figure 2. Distribution of patients according to ASD severity.

Other associated comorbidities were psychiatric disorders (84) (79.2%) and neurological disorders (75) (70.8%).

The distribution of patients according to the other neurodevelopmental disorders is presented in Table 4.

Table 4. Distribution of patients according to other neurodevelopmental disorders.

	Effective	Percentage
Intellectual disability [IQ]		75.5
[20 - 34]	30	28.3
[35 - 49]	41	38.7
[50 - 69]	9	8.5
≥70	26	24.5
Learning Disability	80	75.5
ADHD	34	32.1

IQ: intelligence quotient; ADHD: attention deficit hyperactivity disorder.

The distribution of patients according to psychiatric and neurological disorders is illustrated in Figure 3.

4. Discussion

4.1. Epidemiological Aspects

The overall frequency of ASD in the neurocognitive exploration unit was high in children aged 3 to 16 years, probably due to the chosen study setting. The neurocognitive exploration unit is dedicated to the care of patients with neurocognitive disorders, often associated with ASD. This frequency is close to the proportion of
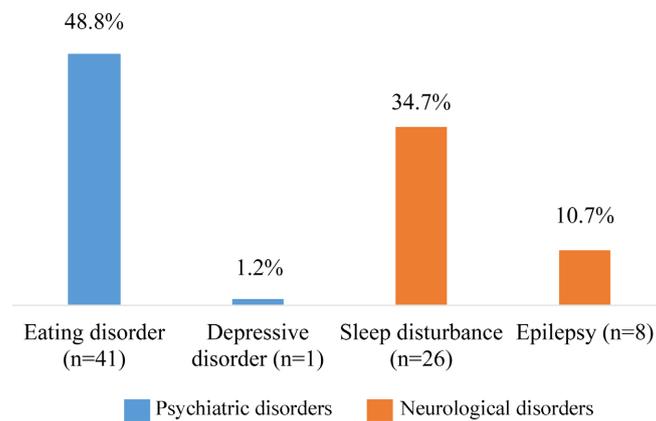
Figure 3. Distribution of patients according to psychiatric and neurological disorders.

57.3% reported by Delobel *et al.,* in France, a prevalence recorded in the French registry of childhood disabilities in Haute-Garonne [12]. However, our frequencies remain overestimated compared to other data in the literature. Traoré *et al.,* in Mali, reported a frequency of 7.8%, recorded in mental health care structures in the district of Bamako and Kim *et al.,* in South Korea, in the general population a frequency of 2.64% [11] [13] [14].

The type of ASD encountered in the present study was childhood autism. This is also the type frequently reported in the literature. Biche *et al.,* in French Guiana and Ha *et al.,* in France, reported a frequency of 38.5% and 28% of childhood autism respectively [15] [16].

A male predominance of ASD was found in the present study with a frequency of 81.1%, as in other data in the literature, where it varied from 65.8% to 83.3% [1] [17]. In the latest good practice recommendations, the HAS and some Western studies mention that girls are often identified later and less often than boys due to more discreet clinical symptoms in girls than in boys [18]. The majority of patients affected by ASD are older siblings [11]. In the present study, older siblings were affected in 36.8% and younger siblings in 35.8%. According to data in the literature, the risk of developing ASD for a new child in a sibling group where there is already a child with ASD is 4% if the child already affected is a boy [18] [19].

The majority of patients with ASD were from middle-class, educated parents who lived together. While previously, ASD was most common in children from educated, high-class parents, these disorders are currently found in all social classes [18].

4.2. Clinical Aspects of ASD

The age at which signs of ASD are observed varies from 12 to 24 months [2] [5]. In our study, it was on average 16.1 ± 5.2 months.

Children with ASD show regression in their communication or language skills at 18 months of age [20]. It was 28.15 ± 8.1 months in our study. This regression mainly concerns communication and socialization [21] [22].

The average age of patients at diagnosis was 7.1 ± 2.9 years. Despite better

knowledge of early signs, the usual average age of diagnosis of ASD is between 4 and 5 years [2] [23]-[25]. The late age of diagnosis in our study could be explained by the lack of awareness of ASD, which could justify the difficulty of parents and school staff to understand the child's behavior and to link it to a medical pathology. A diagnostic delay was also reported by Traoré in Mali and Bonney *et al.*, in Uganda [11] [17].

ASD can be isolated or associated with other pathologies or disorders [18]. Among these disorders, there are other neurodevelopmental disorders. As in our study, the neurodevelopmental disorders most frequently associated with ASD, reported in the literature, were intellectual disability (ID), learning disabilities and ADHD [15] [26] [27].

ASD may also be associated with neurological and/or psychiatric disorders. The neurological disorders found in our study had a lower frequency and concerned epilepsy and sleep disorders. Similar data were reported in Africa and the West of 10.5% by Bonney *et al.,* in Uganda, 14% by Xue *et al.*, in 2008 in the United States of epilepsy cases and 52% of sleep disorders cases [17] [28].

Eating disorders were the most frequently noted psychiatric disorder. Similar data were reported by a study conducted in the United States [28]. In a lesser frequency, depression was also associated with ASD [29] [30].

5. Conclusion

The frequency of ASD consultations at the neurocognitive exploration unit is high, dominated by childhood autism. Boys are the most affected; and these are mainly the eldest children from middle-class parents. Although the signs of ASD are recognized early, diagnosis remains late. ASD is frequently associated with intellectual disability, learning disabilities, and eating disorders.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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