

The diagnosis of autism spectrum disorder in Nghe An province, Vietnam

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ABSTRACT. Autism spectrum disorders (ASD) are characterized by speech and social behavior problems. Worldwide prevalence of ASD was 1 in 59 children in 2014. According to research of 2019, the prevalence of ASD in Vietnam was significantly higher in urban - 1.238% than in rural areas 0.580%. In the absence of specific biological markers, diagnosis of ASD is made based on the behavioral and psychological characteristics of the patient. Four hundred preschool teachers from 187 schools were trained to identify signs of ASD. Among 441 children with autistic signs presented by preschool teachers, (34.9% were treated. Medical management included typical antipsychotics, atypical antipsychotics, antidepressants, selective serotonin reuptake inhibitors, α 2-adrenergic agonists, β -adrenergic antagonists, mood stabilizers, and anticonvulsants. As expected, the most common group of children who had ASD symptoms were children 18-24 months old (35.4%). The incidence of ASD among boys and girls was 75.5 and 24.5%, respectively. Children living in cities were most affected by ASD 41.5%. Following treatment, severe ASD levels decreased from 89.5 to 45%. The decrease in severe ASD demonstrates that diagnosis and therapy functions. In Nghe An, there has been no research on the epidemiology of ASD in children. Therefore, the detection and

organization of treatment and teaching of children are necessary in order to create conditions for children to develop a fuller personality, integrate into the community, and reduce the burden for themselves, their family, and society.

Key words: Autism spectrum disorder; Vietnam; Evidence-based medicine; Early diagnostic; Hobbler; Children

INTRODUCTION

Autism Spectrum Disorders (ASD) are defined as a group of disorders involving changes in social behavior and verbal communication. In most cases the conditions are apparent during the first five years of life (Yen, 2014; World Health Organization, 2019). Intellectual disability is observed in more than half of ASD cases (Baio et al., 2018).

Prevalence of ASD

The prevalence of ASD has increased from 1 in 150 children in 2000 to 1 in 59 children in 2014 (Hossain et al., 2017). Recent evidence suggests that there is an upward trend in ASD prevalence in South Asian countries (Baxter et al., 2015). The 2014 screening study by Yen et al. including 94,186 children aged 1, 5 to 5 years up to 60 months in the northern regions of Vietnam found the prevalence of ASD in these regions of 0.415% (Klin et al., 2015). This is higher than the figures presented in previous surveys in Vietnam (i.e. 0.46% in 2007, 0.416-0.52% in 2013-2014), which indicates that the prevalence of ASD among children in Vietnam may have increased, which is in line with the current global ASD trend. (Hoang et al., 2019). Increasing degree of urbanization was associated with higher risk of ASD (Park et al., 2016). According to a 2019 study, the frequency of recorded ASDs in Vietnam was significantly higher (almost twice as high) among the urban population in comparison with residents of villages. The likelihood of ASD among boys born to families living in rural areas is more than three times higher than the risk of developing ASD in girls from families living in cities (Lauritsen et al., 2014).

Etiology and Symptoms

ASD is not an isolated disorder. It is now widely regarded as a multifactorial disease resulting from genetic and non-genetic risk factors and their interactions (Wang et al., 2017). Evidence for genetic variants in the etiology of ASD includes genes implicated in mental retardation and neuropsychiatric disorders, genes for common pathways and genes for ASD risk, the multigenic contribution of rare or common variations, DNA mutations, and environmental influences on gene expression and / or protein function. (Taylor et al., 2016).

Connection between ASD and perinatal period is proved. Risk factors for the development of ASD in the prenatal period are considered the age of the child's parents ≥ 35 years, the parents' belonging to the Asian race, the presence of arterial hypertension, gestational diabetes, prenatal complications such as the threat of miscarriage and prenatal bleeding. Among the risk factors for the perinatal period, there is a cesarean section, a

significant number of pregnancies in the mother's history, weakness of labor, breech presentation of the fetus, the development of preeclampsia in a pregnant woman and distress syndrome in the fetus. In the postpartum period, factors contributing to the development of ASD are newborn malnutrition, the development of postpartum hemorrhage, the male sex of the newborn, and congenital brain anomalies. (Devlin and Scherer, 2012).

If biomarkers cannot be obtained, the diagnostic criteria for ASD include the behavioral characteristics of the person. The "gold standard" in the diagnosis of ASD is considered to be a clinical diagnosis formed in accordance with generally accepted systems of diagnostic classification and assessment criteria. Unified cognitive tests and developmental assessment or cognitive testing are the most appropriate and standardized. The final result of the assessment underlies the formation of subsequent diagnostic algorithms in relation to a particular patient. The accuracy of the assessment increases the likelihood of correct diagnosis and is necessary for the development of further tactics in relation to the patient. (American Psychiatric Association, 2013).

Diagnostic criteria (Ha et al., 2014):

A. Symptoms must be present in the early developmental period.

- Violations in verbal behavior
- Anomalies of non-verbal communication
- Delayed development, difficulties in the formation of social relationships.

B. The presence of patterns of behavior and actions that tend to be repetitive and are characterized by the presence of at least two of the following factors from the following list:

- Repetitive and stereotyped physical activity or speech
- Limited scope of interest
- Presence of a tendency to perceive non-perception of certain sensory environmental factors.

C. The presence of those listed in the early period of development is mandatory.

D. Symptoms cause clinically significant impairments in social, occupational, or other important areas of current functioning.

E. These impairments cannot be better explained by mental retardation (impaired intellectual development) or general developmental delay. Mental retardation and autism spectrum disorder are often associated with each other, resulting in a comorbid diagnosis of the autism spectrum.

It is necessary to indicate the presence or absence of the following clinical signs:

- Disorders of intelligence
- Language disorders
- Hereditary diseases and diseases caused by the influence of the environment
- Other pathologies of nervous development, behavioral or mental disorders
- Catatonia

MATERIAL AND METHODS

A prevalence study was made of children at age from 12-72 months old in some regions representing 20 districts and towns of Nghe An province from August 2011 to August 2013.

Medical management includes typical antipsychotics, atypical antipsychotics, antidepressants, selective serotonin reuptake inhibitors, α 2-adrenergic agonists, β -adrenergic antagonist, mood stabilizers, and anticonvulsants (McPheeters et al., 2011). Antipsychotics have been effective in treating repetitive behaviors in children with ASD; however, there was insufficient evidence for efficacy and safety in adolescents and adults (Richards et al., 2012)

The procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000. All the patients of Nghe An province, Vietnam did agree to participate in the experiment and do not deny the results of the experiment to be provided in the research paper. The minors' parents and guardians do not deny the results of the experiment to be provided in the research paper.

RESULTS

400 preschool teachers from 187 schools were trained to identify signs of ASD, 49% of which had good results and skills to work with potentially autistic children (Table 1).

Table 1. The results of preschool teacher training for identifying autism spectrum disorder.

No.	City, district, town	Number of Classes	Number of trainees	Output	
				Good	Ordinary
1	Vinh	2	80	55%	45%
2	Dien Chau	2	80	57%	43%
3	Quynh Luu	2	80	59.5%	40.5%
4	Nghia Dan	1	40	45%	55%
5	Thanh Chuong	1	40	46%	54%
6	Tan Ky	1	40	45%	55%
7	Quy Chau	1	40	46%	54%
	Total	10	400	49%	51%

A total of 441 children with autistic signs and symptoms were discovered after teachers learned how to identify and properly behave with such children (Tables 2 and 3).

Table 2. Number of children assigned by trained preschool teachers to the autism spectrum disorder (ASD) department.

No.	District, city	Number of children	%	P*
1	Vinh	251	56.9	
2	Dien Chau	55	12.5	
3	Quynh Luu	51	11.6	
4	Nghia Dan	22	5.0	<0.01
5	Thanh Chuong	23	5.2	
6	Tan Ky	20	4.5	
7	Quy Chau	19	4.3	
	Total	441	100	

* Compared to children without ASD.

Among 441 children with autistic signs being introduced by preschool teachers, 154 children (34.9%) were treated.

Table 3. Number of children treated in the autism spectrum disorder department.

No.	District, city	Number of children	%	P*
1	Vinh	91	59.1	
2	Dien Chau	21	13.6	
3	Quynh Luu	15	9.7	
4	Nghia Dan	9	5.8	<0.01
5	Thanh Chuong	7	4.5	
6	Tan Ky	6	3.9	
7	Quy Chau	5	3.2	
	Total	154	100	

Distribution of autistic children by age, gender and geographic region

As expected, the most common group of children who had ASD symptoms were children 18-24 months (35.4%) (Table 4).

Table 4. Distribution of children with autism treatment by age.

Variable	n	%	P*
2-year-old children (18-24 months)	81	35.4	<0.05
3-year-old children (25-36 months)	66	28.8	
4-year-old children (37-48 months)	37	16.1	
5-year-old children (49-60 months)	23	10.1	
6-year-old children (61-72 months)	22	9.6	
Total	229	100	

The ASD incidence rate for boys and girls was 75.5 and 24.5 % respectively, similar to the worldwide trend (Table 5).

Table 5. Distribution of children with autism treatment by gender.

Gender	N	%	Age average	P*
Male	173	75.5	3.27 ± 1.29	<0.05
Female	56	24.5	3.65 ± 1.56	
Total	229	100	3.46 ± 1.43	
P		<0.05		

Table 6. Children living in cities were the most affected by ASD 41.5%.

Variable	n	%	P
City	95	41.5	< 0.05
Delta	72	31.4	
Mountaint region	21	9.2	
Alpine region	41	17.9	
Total	229	100.0	

Following treatment, severe ASD levels decreased from 89.5%] to 45%. The fact decrease in severe ASD indicates the correctness and feasibility of diagnosis and therapy (Table 7).

Table 7. The level of psychological improvement after intervention in cases of autism spectrum disorder.

Variable	Before intervention		After intervention		p
	N	%	n	%	
Mild and moderate ASD	24	10.5	126	55.0	<0.01
Severe ASD	205	89.5	103	45.0	<0.01
Total	229	100.0	229	100.0	
CARS scale	\bar{X} 40.82	SD 3.55	35.93	3.81	<0.01

The decrease in severe ASD indicates the correctness and feasibility of diagnosis and therapy.

DISCUSSION

ASD is traditionally considered by Vietnamese specialists not only as a disease, but also as a problem of a family with a child with ASD. Children with ASD and their families are often discriminated against. Parents of children with ASD use not only medical, but also religious methods in the treatment of children. However, the problem for families with children with ASD is the availability and quality of necessary medical care. The development of diagnostic protocols adapted to social requirements and economically affordable treatment methods is especially urgent. (Tran and Weiss, 2018). At present, in Vietnam, is no oversight of ASD services. Literally any individual or agency can have whatever services they want, without any government oversight. Even though the majority of treatment interventions included EBP techniques, 17.6% of non-EBP techniques were reported. These results are likely due to their ineffectiveness, but also to significant costs, as well as potential side effects and health risks. In addition, the low overall effectiveness of these approaches in treatment is a possible reason for the low trust of families with children with ASD in medicine and educational systems. Concerning the intervention approach, EBP is considered “appropriate”; however, only 27.9% of agencies met these criteria (Samms-Vaughan et al., 2017).

Diagnostic and Treatment of ASD

Two versions of the Childhood Autism Scales (CARS) have been developed: for patients with an IQ of 79 or less and for patients with an IQ of 80 and above. (Schopler et al., 2010; Chlebowski et al., 2010). Traditionally, the following domains are distinguished among CARS: social relationships; the ability to reproduce and imitate; level of emotional response; physical activity; ability to adapt to change; visualization reaction; reaction of the hearing organs; taste, smell and sensory response; fear or nervousness; activity of verbal communication; ability in non-verbal communication; the severity of the intellectual reaction. (Perera et al., 2017). Another modern sensitive methods for ASD diagnostic: Pictorial Autism Assessment Schedule (PAAS) (Choueiri and Wagner, 2015),

Rapid Interactive Test for Autism in Toddlers (RITA-T) (Zwaigenbaum et al., 2015), Screening Test for Autism in Two-Years-Old (STAT) (Richards et al., 2012), Modified Checklist for Autism in Toddlers (M-CHAT) (Richards et al., 2012).

Screening for ASD is important between the ages of 18 and 24 months, as supported by a considerable evidence. Early screening (before 24 months) can produce a significant number of false positives, but still has some benefit. (Stenberg et al., 2014). It is generally accepted among specialists and experts in the field of ASD that the individual approach to the treatment of patients is considered. The treatment of individual symptoms, including aggression, agitation, inattention, irritability, tendency to self-harm, hyperactivity, makes the treatment of both the health care system and the education more effective. (Adler et al., 2015).

ASD is a pathology predisposing to self-harm, which is mainly associated with impulsivity, hyperresponsiveness and speech impairments inherent in ASD (Volkmar et al., 2014).

Drug correction of ASD involves the use of antipsychotics, antidepressants, selective serotonin reuptake inhibitors, α 2-adrenergic agonists, β -adrenergic antagonists, anticonvulsants, and mood stabilizers (McPheeters et al., 2011). With regard to antipsychotic drugs, there is evidence of their effectiveness in treating recurrent ASD in children, and there is no evidence base regarding their effectiveness and safety in adolescents and adults with ASD (Richards et al., 2012). Due to the fact that RAS symptoms remain refractory to any type of treatment, such patients need Deep Brain Stimulation as alternative method of treatment (McPheeters et al., 2011).

Recommendations and Tactics

- When assessing the development of all children with identified psychiatric pathology, questions related to ASD should be applied.
- If, during screening, the identified symptoms of ASD have a high grade, it is necessary to consider the possibility of a more thorough diagnosis.
- Clinical professionals should consider the use of interdisciplinary approaches for patients with ASD.
- Help and advice from a clinician to family members with a child with ASD is essential.
- Consideration should be given to the use of pharmacotherapy if symptoms are detected in a child with ASD or if there is concomitant pathology.
- An active role of the doctor is required in the long-term planning of treatment and psychological assistance for families and children with ASD.
- It is necessary for doctors to use additional and consider alternative methods in relation to patients with ASD.

CONCLUSION

ASD is a complex and systemic pathology. In Nghe An, there has been no research on the epidemiology of ASD in children. Therefore, the detection and organization of treatment and teaching of children are very necessary in order to create conditions for

children to develop a fuller personality, integrate into the community, and reduce the burden for themselves, their family, and society.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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