MANIFESTATIONS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER DURING SCHOOL AGE

ABSTRACT

The aim of this paper is to identify the forms of ADHD manifestation in a group of 190 Caucasian subjects represented by children and adolescents with ages between 7 and 18 years. They had been supervised at the Child and Adolescent Psychiatry and Neurology Clinic from Timişoara during their school period. In this study, there are two major objectives: first, to establish the frequency of ADHD manifestations, both specific and unspecific, in this particular group and second, to demonstrate that ADHD is accompanied by a higher rate of comorbidities, both psychiatric and neurological.

The study is observational and it represents a retrospective analysis of the clinical data existing at the moment this paper was written. The data come from the assessments of the children from the psychopathological point of view during a structured interview and a clinic examination, in conformity with the DSM-IV-R criteria, performed by a clinician doctor at the moment the child came to the specialised service. The intelligence quotient has been obtained following a corresponding psychometric evaluation where the WISC-IV (Wechsler Intelligence Scale for Children) has been used.

The calculation of the descriptive statistical parameters has been done using both predefined and user-defined functions. The data have been graphically represented by means of frequency tables, using pie graphs and histograms. The results have confirmed the data existing in specialised literature, namely that the attention deficit and low control capacity of the motor activities determine a decrease in the learning capacity which, in turn, leads to low achievement at school and, very often, to school failure [9].

There are also associated comorbidities which act upon school achievement like the speech disorder and instrumental disorders [1,4]. That is why it is important to adapt the school exigencies to the children’s limited capacities, taking into consideration their intelligence quotient, which may be sometimes low in children with ADHD.

The study focused on a group of 190 children of school age who had been in the registers of the Child and Adolescent Psychiatry and Neurology Clinic from Timişoara. The authors consulted the observation record sheets and extracted those ADHD cases which fell within the pre-established age interval, and this was the selection criterion.

Keywords: ADHD, school, children

METHOD

The study is observational and it represents a retrospective analysis of the clinical data existing at the moment this paper was written. The data come from the assessments of the children from the psychopathological point of view during a structured interview and a clinic examination, in conformity with the DSM-IV-R criteria, performed by a clinician doctor at the moment the child came to the specialised service. The intelligence quotient has been obtained following a corresponding psychometric evaluation where the WISC-IV (Wechsler Intelligence Scale for Children) has been used.

STATISTICAL PROCESSING

The data collected from observations have been statistically processed, according to percentage method by means of the Excel programme. The calculation of the descriptive statistic parameters has been performed using both predefined and user-defined parameters. The data have been graphically represented by means of frequency tables, using pie graphs and histograms.

The followed parameters were: sex, age, origin, living conditions, family background, pathological personal antecedents, pregnancy evolution, ADHD specific manifestations (attention deficit, hyperactivity, and impulsivity); non-specific ADHD manifestations have also been recorded, which are present in associated comorbidities. These are as follows: manifestations characteristic to externalization disorders (aggressiveness, opposition, negativism), features falling in the autism spectre (stereotypes, echolalia), the presence of tics, manifestations characteristic to emotional and affective disorders (affection crises, emotional imbalance, irritability, intolerance to frustration) as well as other clinical signs associated with ADHD. Besides, the authors followed the presence of psychiatric and neurological comorbidities, of associated diagnoses as well as the presence of dysmorphic features. Among the neurological comorbidities, the following aspects have been followed: the presence of the minimal
cerebral lesions, convulsive crises, epilepsy and cerebral cranial traumas. The patients’ school achievement for a number of cases has been studied. Records were made of the types of the administered medical treatments and of the evolution of cases under medical treatment, this evolution being assessed from a clinical point of view.

**RESULTS**

A number of 190 cases have been analysed, by means of the observation record sheets belonging to children and adolescents with ADHD. They had been diagnosed, on average, after a period of 1.8 years since the moment they were registered on the records of the Child Neuropsychiatry Clinic.

The distribution of the disease by sex is indicated in Figure 1.

![Figure 1. Distribution according to sex within the sample](image)

Following the calculation of the children’s mean age, the value of 10.43 was obtained with the standard deviation 3.1.

The distribution according to their origin is shown in Figure 2.

![Figure 2. Distribution according to origin](image)

Concerning the environment where these children had been brought up, we found out that 10% of them came from foster care centres, 6% were in care of a maternal assistant and 1.5% were adopted.

The living conditions have been evaluated as being inappropriate in 18% of the cases. This refers to family atmosphere, to the existence of aggressiveness in the family, to precarious survival conditions and low income, insufficient for the needs of the family. Seven of the cases come from disorganised families and other four come from families where there was a divorce.

The evolution of pregnancy was risky in 8 of the cases, 3 pregnancies ended on time by help of medical treatment, 2 had toxaemia (or pregnancy induced hypertension) and in 3 cases an abortion imminence had occurred. 8 of the patients were born by Caesarean section and in 2 of the cases premature rupture of membranes (PROM) had occurred. Two of the patients’ mothers had taken toxic substances during pregnancy. Other perinatal risk factors are presented in Figure 3.

![Figure 3. Risk factors depending on pregnancy](image)

It has been noted that, in 38.74% of the cases, pathological personal antecedents correlated with ADHD are present. Some of them are shown graphically in Figure 4.

![Figure 4. Pathological personal antecedents](image)

Childhood diseases could be found in the pathological personal antecedents of 16% of cases. Of these, varicella was present in the medical history of 7% of cases, Exanthema subitum (roseola infantis) in the history of 3% of cases, scarlatina (scarlet fever) in 1.5% of cases and mumps in 4% of cases.
There were two cases which had suffered from infections with *Toxoplasma gondii* in their antecedents.

Pains in the ORL sphere could be detected in 12.63% of cases. Otitis has been met in 7% of cases, adenoid vegetations in 5% of the cases, while repeated rhinopharyngitis in 4% of cases. One of the cases had neuro-sensorial deafness.

Enterocolitis has been found in the antecedents of 3 of the cases, intolerance to lactose in 2 cases and intestinal parasitosis in 2 cases. Meningitis was found in the anamnesis of 4 cases, one of them being caused by a pneumococcus, encephalitis in a single case and encephalopathy in a single patient. Anaemia was noticed in 3 of the patients’ antecedents, one case being caused by iron deficiency.

Concerning the presence of cardiac diseases, one of the cases had Wolf-Parkinson-White syndrome, one had non-cyanogenic congenital heart malformation and another one had an atrial septal defect.

Other findings in the patients’ pathologic personal antecedents have been: 1 case of anal imperforation, 3 cases of inguinal hernia, one case of testicular ectopy and one case of hydrocele.

Following the psychometric assessment, 5% of cases had the IQ 35-49 (medium mental retardation), 18% had the IQ 50-69 (light mental retardation), 21% had IQ 70-84 (laminar intellect) and 53% had the IQ over 85. Figure 5 indicates the distribution of the cases according to the ADHD subtypes: the predominantly attention deficit subtype, the hyperactive-impulsive subtype and the combined subtype.

In this group, unspecific ADHD symptoms have been found. Thus, within the features belonging to the autism spectre, 13% of cases displayed stereotypes and 7% of cases had ecolalia.

The presence of tics has been registered in 4% of the cases, 5 of them being motor type tics, and 2 of palpebral type.

Within the symptoms of disorders in the emotional and affective sphere, 42% of cases had affective crises, 8% had emotional lability, 16% had irritability and 20% suffered from intolerance to frustration. The frequency of aggressiveness, opposition and negativism, in correlation with ADHD might be noted in Figure 6.
The totality of the comorbidity in this study is found in 80% of the patients. Psychiatric comorbidities have been found in 65% of the cases. The graph in Figure 7, shows a great part of them. Disorders in the field of speech and language have been found in 23% of the cases as follows: 10% cases of dyslalia, 3% cases of elective dumbness and 2.5% cases of babbling.

Instrumental disorders such as dyslexia, dyscalculia and dysgraphia have been found in 9% of the patients and other 5% had only dyslexia.

Enuresis and encopresis have been found in 14% and, respectively, 3% of the cases.

Concerning sleep disorders, there were 2 cases of nocturnal automatism, 4 cases of pavor nocturnus, 6 cases of insomnia, 2 cases of somniloccia and 4 cases of bruxism.

Concerning the dymorphic features, there have been 3 cases with hypertelorism, 2 cases with epicantus, 4 cases with microcephaly, 1 case with macrocephaly and 2 cases with low implanted ears. Strabism has been noted in 8% of cases, of which 6% were of divergent type and the rest of 2% were of convergent type. The presence of angiomas has been noted in two cases, one placed at cephalic level, the other at thoracic level.

In 4 of the analysed cases, the presence of the congenital talipes echinovarus has been noted, 3 of them being of the talus valgus type. Two of the cases had congenital flat foot and one case had congenital dysplasia.

The diagnostics found in association with ADHD were the following: 2 cases of progressive muscle dystrophy, 4 cases of Asperger syndrome, 6 cases of disorder in the autistic spectre, 1 case with Gilles de la Tourette disease and 1 case of congenital ichthyosis.

Concerning the neurologic comorbidities, the authors have found out that 45% of the cases had a neurological affection. A graphic representation may be viewed in Figure 8.

Out of the studied cases, 6 have had pyramidal syndrome and 5 had cerebral paralysis, 3 of which being spastic cerebral paralysis.

The school achievements have been assessed for 60 patients. 15% of them had very weak results, 67% had low achievements and 18% had average academic achievements.

Medication treatment had been administered to 60% of the patients in the study, as presented in Figure 9. The evolution under medication treatment has been clinically evaluated and it is shown in Figure 10.
DISCUSSIONS AND CONCLUSIONS

The disorder with attention deficit and hyperactivity affects more and more children and adolescents every day, interfering with their social, familial and academic activities [2]. During childhood and adolescence, ADHD affects boys predominantly, a fact that may be noted in this study, too, the proportion boys : girls being 11 : 3.2.

A higher frequency of the disease may be noted in children from urban areas, a fact that may be explained by a higher addressability of urban patients.

Children from foster care centres, those being cared for by maternal assistants or by adoptive families but also children brought up in their biological families who had developed an ulterior attachment disorder, support the theory that attachment is implied in the occurrence of ADHD.

Inadequate living conditions, tensioned, conflicting atmosphere and/or intra-familial aggressiveness represent other factors involved in the development of psychopathology. Although the ADHD aetiology is unknown, it is linked to a great number of pathological personal antecedents both in the intrauterine period and during childhood.

It is well known the relationship between ADHD and factors such as prematurity or hypoxic-ischemic encephalopathy, with a high vulnerability of the dopamine system to ischemia. Also, any condition which, at the moment of birth, reduces the quantity of oxygen, such as the presence of the Nuchal cord or a prolonged labour, may be correlated with the occurrence of ulterior psychopathology. This is also reflected by our study.

The nuclear symptoms from ADHD determine a higher susceptibility of the children to this disorder, for physical lesions like the cranial-cerebral traumas or for fractures. Various studies attribute this relationship to these children's low ability to assess danger. Still one must take into consideration the fact that, in many cases, the children come directly to emergency services, without such event being recorded in the patient's history.

The prevalence of the ADHD subtype is in concordance with the up to the present existing studies, with the combined (mixed) subtype being the most frequently met in the epidemiologic studies [8]. The prevalence of the predominantly hyperactive-impulsive subtype decreases with age, keeping the symptoms characteristic to the deficit of attention and to the functionality affection. Besides the ADHD specific symptomatology, there are also manifestations due to associated comorbidities.

Thus, in the present study, too, autism specific features, motor tics, symptoms characteristic to the emotional and affective sphere, manifestations characteristic to sleep disorders, as well as features characteristic to behaviour problems of externalization have
been discovered. Due to the clinic characteristics of ADHD, the first consequences of this disorder could be detected in the school environment. The attention deficit and the low ability to control the motor activities determine a decrease in the school performance, a fact that leads to low school achievement and very often to failure [9]. Associated comorbidities, such as speech disorder and instrumental disorders, influence the school performance, too. That is why, it is important to adapt school exigencies to the children's limited capacities, taking into consideration their intelligence quotient, which, very often, might be a low one in children with ADHD.

In the studied group, a high percentage of comorbidities, both psychiatric and neurologic, have been found, which falls within the general percentage that might be up to 80%, while according to certain studies even up to 100% [10]. The word “comorbidity” has many meanings, for instance, it may refer to a disease that leads to the occurrence of another one, or to two diseases, distinct and independent from one another, which coexist, or it may refer to two, or to many diseases which have the same aetiology. Understanding the mechanism which determines the occurrence of comorbidities could lead to a better understanding of the psychopathologic development [11]. That is why further studies are necessary to clarify the relationship between ADHD and the associated comorbidities.

It is well known the fact that not all the ADHD patients benefit from medication treatment, sometimes the behaviour therapy is considered to be sufficient. It is also well known the fact that not all the patients react to the treatment in the same way, their evolution might be very good or may worsen due to the presence of secondary effects. All these demonstrate the varied aetiology of the disease and may suggest the existence of different patterns of disease.

The precocious diagnosis and treatment lead to a better control over the symptoms, favour the development in the academic field, improve the social relationships, diminish the risk of the occurrence of other associated disorders and, due to all of these, they improve the prognosis.

In conclusion, we have established that the hyperactivity disorder with attention deficit has various manifestations, both specific and unspecific and it is accompanied by a high frequency of comorbidities.

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