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EDUCATIONAL IMPACT OF EPILEPSY IN CHILDREN

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Abstract:-
Introduction: *Epilepsy can interfere with a child's cognitive development and may result in academic difficulty. Our objective is to identify and estimate the link between epilepsy and academic difficulties.*
Methods: *This is a prospective descriptive and analytical case-control study carried out at the Antsakaviro Laboratory of Neurosciences and Mental Health for the cases and in the four Public Primary Schools of the rural commune of Anjepy for the controls from 1st October 2014 to 31st January 2015. The frequency of school difficulties in epileptic and non-epileptic children, the relationship between epilepsy and school difficulties were evaluated.*
Results: *The frequency of school difficulty in children with epilepsy was 49.13% compared to 25% in non-epileptic children with an Odds Ratio of 2.90 with 95% specificity and a confidence interval of 1.87 to 4.43. Among the cases, 52.94% of the children had their first seizure before the age of 2 years with a predominance of generalized tonic-clonic seizures at 57.65%, the majority of which were of the idiopathic type (67.06%). The majority of children with epilepsy had a lack of concentration in 43.53% of cases and memory impairment in 31.76%, while memory impairment (38%), lack of concentration in 20% and repetition in 20% of non-epileptic children.*
Conclusion: *Epilepsy is a serious illness for the child that can lead to a learning disability.*
Therefore, prevention of seizures and early detection are essential.

Key Words:- *Academic difficulty, child epilepsy, risk factors*

INTRODUCTION

Epilepsy is the most common chronic neurological disorder in the world with an estimated average prevalence of 8,2‰ in the general population, 80% of which are in developing countries [1,2]. It is a neurological condition that occurs at any age. It occurs more frequently at the extremes of life: children, adolescents and the elderly [3,4]. It is the first neurological disease in children with an incidence of 4000 new cases of children under 10 years of age per year in France, more than half of which begin before the age of 12, while the child's cerebral maturation continues until adolescence. This explains why, in children, cerebral excitability is greater, facilitating the onset of seizures [3]. Therefore, epilepsy may interfere with a child's cognitive and social development, especially if the onset of the disease is early. Studies have shown that epilepsy in children is a risk factor for school failure. It is estimated that 30% to 40% of children with epilepsy will experience difficulties in their education [5]. This reflection has drawn our attention to conduct a study on the educational impact of epilepsy on children. Thus, we set the objective of identifying and estimating the links between epilepsy and the occurrence of educational difficulties in children.

Methods

This is a prospective, descriptive, and analytical case-control study from October 1, 2014 to January 31, 2015. We have included as cases the epileptic pupils 5 to 12 years old seen at the Laboratory of Neurosciences and Mental Health for the first consultation or control, and the controls are pupils 5 to 12 years old in the four Public Primary Schools of the Rural Commune of Anjepy who have no known epilepsy or no history of seizures. However, pupils whose parents do not want their children to participate in this study were excluded from the case and control.

Results

After inclusion and exclusion criteria, we selected 173 cases (children with epilepsy) compared with 200 controls (children without epilepsy).

Children with epilepsy are predominantly male (56.07%) with a sex ratio of 1:28 and mean age 7.6 years. In 52.94%, the first seizure was before the age of 2 years with generalized tonic-clonic seizures predominating at 57.65%, the majority of which were of the idiopathic type (67.06%). 49.53% (n = 85) had difficulty at school. The risk of occurrence of academic difficulty was calculated by Odds ratio, which is 2:90. With confidence interval [1.87 - 4.43], it gives 95% specificity. The academic difficulties encountered in the cases were dominated by a lack of concentration at 43.53% (n = 37), memory problems at 31.76% (n = 27), difficulty reading and writing at 17.64% (n = 15), in special school at 3.53% (n = 3), and the remaining global difficulties at 3.53% (n = 3).

In children without epilepsy, the average age is 8.5 years, predominantly male (58.5%) with a sex ratio of 1:41. The average age of the children with epilepsy is 8.5 years. School difficulties affect 25% (n = 50) of the children. They mainly concern memory problems at 38% (n = 19), lack of concentration at 20% (n = 10), repetition at 20% (n = 10) and reading and writing difficulties at 22% (n = 11).

Discussion

Our objective is to describe the relationship between epilepsy and academic difficulty from a case-control study comparing students with and without epilepsy. At the end of this study, the frequency of school difficulties in epileptic children seen at the Antsakaviro Neuroscience and Mental Health Laboratory was 49.13% (85/173) compared to 25% (50/200) in the non-epileptic population. According to a Senegalese study, out of twenty-eight children with epilepsy attending school, including 23 in French schools and 5 in Koranic schools, 52.17% of the children attending French schools had a disrupted schooling and the others had to repeat several years or even drop out. School difficulties are multifactorial, with many environmental, social and individual factors influencing the behaviour and academic performance of pupils, in addition to epilepsy through repeated seizures [5, 11].

Being epileptic increases the occurrence of school difficulties 2.90 times with specificity 95%, confidence interval 1.87 - 4.43. In Marrakech, more than 30% of children with epilepsy who attend school have difficulties at school [7]. This is close to our results. The origin of these learning difficulties in epileptics involves the cause of the epilepsy, the type of epileptic syndrome and antiepileptic medication. The particularity of epilepsy in children is that it occurs in a developing brain. This peculiarity is at the origin of semeiological and diagnostic differences and possible cognitive-behavioural consequences. The type of epilepsy (underlying cause) and the repetition of epileptic seizures modify the brain maturation process and may also lead to cognitive and/or behavioural disorders. Children with epilepsy due to the effect of the disease itself have difficulty concentrating or paying attention and loss of motivation. Moreover, the repeated seizures and the early onset of epilepsy lead to incomplete mental recovery as seen in our study, most of them before the age of 2 years. The type of seizure can be seen especially in the location of the epileptogenic focus in the cerebral cortex in a functional area of memory. Some antiepileptic drugs can cause fatigue, drowsiness, slowing down and disrupt memory. This effect is dose-dependent because it is not easily tolerated in monotherapy or in combination therapy. There are a number of conditions that are more likely to occur in people with epilepsy than the general population, including attention deficit hyperactivity disorder, learning disabilities and autism spectrum disorders that increase the risk of academic difficulty. According to a study conducted in our Antsakaviro Neuroscience and Mental Health Laboratory, having epilepsy increases the occurrence of ADHD three times with OR 3.27 CI [1.83-5.84] and $p = 0.00002$ [6, 8, 9].

The predominance of idiopathic tonic-clonic generalized epilepsy in our study is controversial because most children with idiopathic epilepsy are normally intelligent and can conduct successful studies. However, all the work concludes that they have impulsivity and difficulties on neuropsychological tests, especially in attention, language and memory as well as in nonverbal tasks. As in all Africa and in Senegal, epilepsy is a factor of social exclusion. Most patients do not attend school

either because of a motor and/or intellectual disability or, more often than not, because of the reluctance of parents and teachers to admit to school a child whose illness is "transmissible in case of drooling seizures". Among parents, 52% believe that a child with epilepsy should not be sent to school. Moreover, school expulsion is the rule in case of seizures at school. The prevalence of epilepsy in schools (2.6%) is much lower than the prevalence in the general population. While children with symptomatic epilepsy often have cognitive and/or motor difficulties which are a handicap to normal schooling, this is not the case with idiopathic epilepsy. Most children with idiopathic epilepsy are normally intelligent and can successfully complete school. However, all research concludes that they have impulsivity and difficulties with neuropsychological testing, including attention, language and memory as well as non-verbal tasks, which can significantly affect and disrupt schooling. In addition, school absenteeism due to seizures, and the perceptions that parents and teachers have of the schooling of children with epilepsy are not conducive to the development of these children at school [3, 8, 11].

Male predominance was found, with 56.07% of epileptics and 58.5% of non-epileptics in our study population, with a sex ratio of 1.28 and 1.41 respectively. This is consistent with the literature. Several surveys on epilepsy, with rare exceptions, have shown a higher frequency in males than females [12].
In children without epilepsy, we have 25% of the difficulties at school. In France, nearly 20% of children have difficulties at school. The fundamental learning process - the acquisition of reading, arithmetic, writing and spelling - is not natural, but results from pedagogical actions constitutes the priority objectives of the first years of schooling. There are many reasons for this. Among them, specific learning difficulties are often not well known; they are said to affect at least 5 to 6% of children, i.e., one child per class [5, 13].

Conclusion

For the child, school represents the first open door to the social scene, allows his or her psycho-affective development, and conditions his or her socio-professional future. However, the child with epilepsy is most often rejected by schools. Learning disabilities are overrepresented in children with epilepsy, even in its mild forms, and represent a real public health problem. We have chosen a theme concerning the school impact of epilepsy in children to study the case of our country. However, this study, which is done in a limited area, brings little certainty about the reality in Madagascar and how it compares to the rest of the world. This study allowed us to observe that epilepsy increases the risk of the child having difficulties at school. The origin of school difficulties is multifactorial, hence the interest of early detection of epilepsy in order to avoid the occurrence of learning problems. A learning methodology must be adapted in epileptic patients known to fill the gaps related to the disease.

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