

The impact of childhood epilepsy on learning: the medical perspective Dr Doriette Soler

Many times the problem of learning and behaviour in epilepsy is hidden – like an iceberg. Mostly it is our fault, the professionals, who address seizures and forget the other aspects of epilepsy. The relationship between learning and epilepsy is complex and notwithstanding the amount of research in this camp, there is still a lot still to be learnt.

Research shows that about 50% of children with epilepsy have problems with learning. less than 1% of these, attend special schools. Studies in Malta show that although 82% of children attend mainstream schools, more than 50% of these needed psychological educational assessment because of learning problems. What are the factors influencing learning in children ? They are many. There is epilepsy itself, the type, the severity, the frequency of seizures and the cause of epilepsy. There are children who because of problems during birth, may have other trouble with learning besides epilepsy. Medication for epilepsy may interfere with learning and there could also be social factors, the way teachers and other pupils accept children with epilepsy. There is the genetic factor. Children having parents with learning difficulties will have a greater chance of learning problems. An important element is how parents and children adapt themselves to the problem of epilepsy in everyday life.

Some clarifications need to be made. What is epilepsy? It is that condition in which the person has the tendency to have more than two seizures. The types of seizures can be divided on how the brain generates this extra electricity. Some seizures are focal, meaning that they start in one particular area of the brain. Then there are the generalised seizures in which the whole brain is effected by this extra electricity. The cause of epilepsy can be classified into three categories. In the majority of children, no cause is found even after medical and neurological examinations are made (idiopathic). Everything seems normal. Then there is another category of children, with symptomatic epilepsy where the epilepsy is caused by some damage in the brain or there is a problem with the development or structure of the brain. Most times these children will have other problems besides epilepsy, like cerebral palsy or developmental delay. Another category is the cryptogenic, where everything seems normal but after examination, we find there is a problem with their development.

What is learning? Learning is the ability to process information around him and inside him with which s/he programmes his/her movements and behaviour. There are three important processes in learning that the brain is capable of doing. These are:

The process of Vigilance, which is the ability of the individual to remain in contact with his/her environment.

The process of Attention is the ability to focus information or select information.

Then there is the process of memory which is the ability to remember what s/he has learnt.

Any problem with one of these fundamental processes, will result in problems with learning.

The concept of learning in the camp of epilepsy leads us to two categories of children. Those with learning disability, who have a permanent problem with their cognitive development. This problem comes out after certain tests like IQ testing result in less than 70. These children, besides their academic problems will have other problems

including how to adapt themselves in their day to day life, and how to relate socially with others.

The other category of children, those with learning difficulties, whose intellectual process is normal but who have a problem with education, reading, arithmetic and other school subjects.

Research shows that children with epilepsy are more vulnerable to reaching their full potential of learning and have more problems than other children with their reading, writing, arithmetic, comprehension etc. Looking from the medical point of view, we can place children with epilepsy into two categories. Those with permanent learning difficulties because of permanent damage to their intellectual processes that are involved with learning. many times these children have other problems besides epilepsy, like cerebral palsy, visual or hearing impairment.

Then there are those children who have state dependent epilepsy. This is the one that concerns us most, because it is the type, which we can help, which we can reverse. Unless there is early treatment, it can result in permanent effects on learning. The cause of these state dependent learning difficulties can be epilepsy itself, types of medication, their mental state like depression and the way we teach these children. This is why it is so important that carers look out for these learning difficulties.

How can epilepsy cause this state dependent epilepsy? There are those children who although they do not seem to be having seizures, their brain keeps generating higher electricity, particularly during sleep. This high electricity can interrupt the process of the development of language or behaviour. Early diagnoses avoids permanent effects on learning.

Then there are those children with transient cognitive impairment, meaning that although they do not seem to have seizures, they have episodes of higher electricity than normal for less than three seconds, but many times per day (even hundreds). This will interfere with their learning. There are also those children who have many seizures during the day and have no time to recuperate between one and the other. These children will obviously have learning problems.

These problems come out after research on neuropsychological testing. Such tests on children with epilepsy show that these children have a problem with the way they control their attention, they have a problem with memory, particularly in dealing with a lot of information at one time. They have a problem in the way they process information. They may have problems with co-ordinating the movements of their eyes and hands and they can also have a problem with language. With transient cognitive impairment, i.e. those children with brief periods of high electricity but who do not appear to have seizures, when the seizure is on the left side of the brain, their problem in processing information that is presented in the form of language is higher. If the seizure is on the right side, their problem of processing, is if the information is presented in visual form.

These findings lead us to find ways of how we should teach children who have problems with learning due to their epilepsy.

Medication is a question of balance. Medication is a must, because unless epilepsy is treated, it can interfere with learning. The two medicines with the least interference to learning or attention are Lamotrigine and Tegretol or Carbamazepine. Phenobarbitone and Benzodiazepine may interfere for a short while with the process of attention, but on analysing all the implications, the medicines in themselves need to be used in those types of seizures, in those children with higher than normal electricity which is not

apparent on the outside. How does one get to know that a child with epilepsy has this state dependent learning difficulties that are potentially reversible ? If one notices that the child is going backwards in school, or if they lose an ability that they previously had, or if their ability in school fluctuates. Sleeping a lot during the day, or strange unexplainable behaviour, seemingly autistic or ADHD. The origin of this could be epilepsy. It is very important that if we notice such factor, an early assessment is made.

So what are the implications of these findings? Obviously the implications are many and varied. There are those implications for those responsible for planning services such as educational, medical and social. We need to look further than just medication in treating these children in order to build a clear picture of the difficulties and abilities of these children. For this to happen, we need to have an interdisciplinary process for a better assessment of these children. After assessment, proper support should be given.

I wish to close by encouraging all those in contact with children to look out for these problems and to ensure they are treated. Thank you.