

Case Report

Non Adherence to Antiepileptic Drugs in a Child with Epilepsy: A Case Report

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Abstract

Non-adherence to anti-epileptic drugs has adverse consequences in children and adults, the commonest of which is the loss of seizure control which in turn compromises the quality of life. Many studies on non-adherence in chronic illnesses have focused on adults but it is worth noting that circumstances surrounding non-adherence in children are different from that of adults because of the parental involvement required. In addition, the consequences of non-adherence to antiepileptic drugs may have worse effects especially in children whose brain function is still developing. In this case report, a child who was non-adherent to antiepileptic drugs, the circumstances surrounding this non-adherence as well as the possible adverse effects are presented along with measures that were used to improve the adherence.

Keywords: Epilepsy, Antiepileptic drugs, Non-adherence.

INTRODUCTION

Epilepsy brings about enormous suffering in the world but more so in the developing countries which have higher incidences (Duggan, 2010). Persons with epilepsy generally have poor health outcomes such as increased psychological distress, are prone to more physical injuries such as fractures and burns, and have an increased mortality rate (Meyer et al., 2010).

According to the World Health Organization, "epilepsy refers to a group of chronic brain conditions characterized by recurrent epileptic seizures". These seizures are the clinical manifestations of excessive and/or hyper-synchronous, usually self-limited, abnormal activity of neurons in the brain (World Health Organisation, 2004). In Africa, epilepsy affects over 10 million people. The prevalence rates range from 2.2 to 58 per 1000. The prevalence is higher among children, adolescents and the elderly (World Health Organisation, 2004). Epilepsy in sub-Saharan Africa is known to be mainly secondary as a result of persistently high risks at birth, and the adverse neurological effects of viral, bacterial, malarial and other parasitic infections that are prevalent during and beyond childhood (Duggan, 2010).

In 2003, Uganda had a prevalence of 13 per 1000 people (World Health Organisation 2004), however data on the current national prevalence is scarce as most of the studies done have been mainly regional and/or hospital based studies. However, according to one study done in the western part of Uganda in 2010, the age-specific prevalence of epilepsy in children less than 15 years was 2.04% (Duggan, 2010).

It is envisaged that up to 80% of the epilepsy cases can be diagnosed and successfully managed at primary and secondary levels by raising the competence of health care personnel (Meyer et al., 2010; World Health Organisation, 2004). Of these, 70% will go ahead to have productive and fulfilling lives, that are seizure-free (CDC, 2014; World Health Organisation, 2004). Antiepileptic drugs (AEDs) are known to be the major treatment for most of the affected people and these are recommended by health workers depending on several diagnostic factors such as: the type of epilepsy, the frequency and severity of the seizures, as well as age and other health conditions (CDC, 2014). However, treatment is marred by the shortage of trained health

personnel, the high cost and difficulty of access to technical investigation, and poorly sustained drug treatment (Duggan, 2010) which could be as a result of a stock-out or non-availability of the drugs or lack of patient adherence to AEDs.

The poor adherence to AEDs is an important contributor to continued/recurrent seizures as a result of loss of seizure control (Hovinga et al., 2008; Modi et al., 2008; Modi et al., 2011) and this translates into an increase in the burden of health care costs and reduced productivity (Hovinga et al., 2008) in addition to affecting clinical decision-making resulting from the underestimation of AED efficacy and tolerability and overestimation of dosing requirement for optimal efficacy (Modi et al., 2008)

There is paucity of data regarding non-adherence to AEDs in Uganda and Africa generally but in one American paediatric study, non-adherence to AEDs estimates ranged from 14% to 43% depending on the measurement method used (Modi et al., 2008). Another study put the level of non-adherence at about 50% (Osterberg and Blaschke, 2005AD). Despite the studies being done in a different setting as well as the subjectivity of the methods used to ascertain adherence, it can be inferred that non-adherence is a big problem in paediatric epilepsy populations. Thus non-adherence in epileptic children is a potential continuous challenge if the key therapeutic goal of no seizures is to be achieved (Modi et al., 2011).

In this case report, a child who was non-adherent to AEDs is presented along with the possible causes and complications of this and the measures that were instituted to improve the adherence.

CASE REPORT

N.F is a 7 year old girl child, brought to hospital by her mother, with complaints of recurrent convulsions since she was 6 months of age despite having been on anti-convulsant medication. This child had been relatively well until at about 3 months of age when she got her index convulsion. This convulsion was one sided with vigorous body movement and lasted about 5 minutes; it was one episode and was not associated with urinary or faecal incontinence. This index convulsion had been preceded by a high grade fever that was believed by the mother to be an after-effect of immunization. The child was taken to a nearby clinic and was subsequently treated with unspecified medication and the child reportedly recovered well. However, at 6 months of age, the convulsion recurred and the mother described it as still one sided, with temporary loss of consciousness, no associated frothing at the mouth and no associated urinary or faecal incontinence. The child was taken to a nearby clinic and was treated with unspecified

medication although unfortunately this time around, the child never showed remarkable improvement and kept getting recurrent convulsions almost every week and at worst on almost every day of the week. This went on until the child was 7 years of age. By this time, the convulsions were of a mixed presentation; sometimes they were one sided and involved vigorous upper and lower limb movement at other times they only involved rolling of the eyes and frothing at the mouth and on some occasions they involved the entire body but there was never associated urinary or faecal incontinence. During this time (6 months to 7 years) the mother had sought help from different medical clinics and the child had been treated with anti-convulsant medication however there was minimal improvement in symptoms. She denied going to traditional or spiritual healers during this time frame. The mother thus decided to seek help in the national referral hospital.

A review of the past psychiatric and medical history showed that the child had long standing history of recurrent convulsions but no other medical illness. She was not HIV-exposed. This child had been treated for the convulsions with a range of medication including: diazepam, phenytoin, sodium valproate, carbamazepine and phenobarbitone, in no particular order. These medications were changed as often as the child attended the different clinics for the illness. Sometimes the child was on single drug therapy and at other times on combination therapy. This was either due to the medical worker's instructions or the mother's discretion. The mother rarely complied with the dosage instructions for her child. She attributed this to reasons such as: some medicines being better than others in controlling the convulsions and others having fewer side effects and at times to sheer fatigue of treating an illness that was not showing any hope of a remarkable improvement.

The child's perinatal history was uneventful as well as the immediate postnatal period.

This child had only got the BCG, polio 0, polio 1, Diphtheria-Pertussis-Tetanus (DPT), Hepatitis B and the Haemophilus influenza vaccines. She never got the rest of the vaccines since the mother associated the vaccination to her index convulsion.

A review of the child's growth and development history indicated normal growth up to when she was about 2 years of age. She sat unsupported at 6 months, stood unsupported at 10 months and walked unaided at 1 year. By 1.5 years, she was able to say some words, though they were not well articulated and her vocabulary never improved so much from then till her current age as she is able to say only a few comprehensible words; she can hardly construct a sentence. She can sit, stand, walk and run. However, she is unable to sit still in one place. She is very easily distracted and often her mother has to keep an eye on her as she sometimes wanders away from home. She is not in school yet and mother gives

the recurrent convulsions as the main reason for this.

N.F lives with both her parents. The parents are not blood relatives of each other. She is the second born in the family of two children. The elder sibling is fine. There was no known family history of epilepsy or any other kind of mental illness.

Mental status examination (MSE) revealed a well groomed, school-age going child who could not sit still. She kept saying one word, "ebiyimba" and the mother translated this as meaning she wants a phone with music. She was very easily distracted and never answered appropriately any of the questions that were put to her. During the MSE, there was no observed seizure.

At admission, a tentative diagnosis of uncontrolled partial complex seizures was made, basing on the history the mother had given.

Investigations done included: A complete blood count, whose only significant finding was that of a raised platelet count of 459,000 cells/UL. The blood smear for malaria parasites did not show any parasites. The serum electrolytes and serum calcium levels were normal. The child's brain EEG and the brain MRI scan were normal.

The child was started on sodium valproate 250mg twice a day. However, the child continued to have seizures, albeit less frequently. These were observed to be generalized tonic-clonic seizures, with frothing at the mouth, however no associated urinary or faecal incontinence. The convulsions lasted about 3 minutes and there was no immediate regain of consciousness soon after the convulsions. Carbamazepine 200mg twice a day was added to the child's treatment regimen and the child was seizure free for about three days. The child then started getting on and off seizures on ward and on probing it was discovered that the mother was faltering on medication especially the evening doses. The mother attributed the faltering to a miscommunication, saying she did not know she was supposed to continue giving the medicines in the evening. It was decided that the mother needed to be educated on the nature of her child's illness, the importance of adhering to treatment as well as the dangers of non-adhering and self-medication. This was done by the clinical psychologist and the medical workers on ward. The mother agreed that she would adhere to treatment. While on ward, a chart was made and each time treatment was administered, it was recorded on the chart. The child was discharged after being seizure free for 5 days while on the ward.

Follow up: At review, 2weeks after discharge, the mother reported that the child had had seizures 3 times on different days while at home. However, the mother denied history of non-adherence to the AEDs. Diazepam 5mg once a day was added on to the treatment. The rest of the other treatment was maintained.

DISCUSSION

This case report highlights a number of factors affecting adherence to anti-epileptic medication among children with epilepsy. The reasons commonly given for non-adherence are: forgetfulness, other priorities, decision to omit doses as was the case in our patient, lack of information (this could also have been a contributory factor in our case) and emotional factors (Osterberg and Blaschke, 2005). In addition, it is not uncommon in many parts of Africa to view epilepsy as a manifestation of supernatural forces and also to think of it as a result of attacks from ancestral spirits. As a result of this, many patients may first consult the traditional healers and even when they come to hospitals for treatment, they tend to follow the recommendations of the traditional healers for a long period of time which more often than not compromises adherence (World Health Organisation, 2004). In N.F's case however, the mother denied any history of seeking services of the traditional healers.

The health sector also plays a part in promoting non-adherence. Health workers contribute to patients' poor adherence by prescribing complex regimens, failing to explain the benefits and side effects of a medication adequately (we are not sure this was the case in N.F but neither can we rule it out), not giving consideration to the patient's lifestyle or the cost of the medications, and having poor therapeutic relationships with their patients (Osterberg and Blaschke, 2005), which was likely in this patient as the mother kept moving from one clinic to another. Health care systems also create barriers to adherence by limiting access to health care (Asadi-Pooya, 2005; Osterberg and Blaschke, 2005), which in Uganda's case is mainly the long queues at the public health facilities, using a restricted formulary (Osterberg and Blaschke, 2005) which is also prevalent in Uganda's public health facilities; however this was unlikely to be the reason in N.F as the mother initially sought care in private facilities which often have a variety of drugs. However, these facilities unnecessarily switched the child to different formularies, and this together with possibly prohibitively high costs for drugs (Osterberg and Blaschke, 2005) could have further impeded adherence. Usually, the deviations in medication taking occur as omissions of doses as in N.F's case or delays in the timing of doses. Often patients commonly improve their medication-taking behaviour in the 5 days before and after an appointment with their health care provider a phenomenon known as "white-coat adherence" (Hovinga et al., 2008) and it would have been good if at the return visit, there was a deeper probe into N.F's adherence pattern within the first two weeks of leaving hospital to assess if this is a possibility.

Many of the adherence studies have focused on

adults and one such study found that non-adherence was associated with increased morbidity and mortality as well as higher health care costs. In addition, non-adherence when not realized, may affect clinical decision-making resulting from the underestimation of AED efficacy and tolerability and overestimation of dosing requirement for optimal efficacy (Modi et al., 2008) which was a likely possibility in N.F's case leading to recurrent changes in medication types, dosages and dosing frequency. Further, non-adherence in children is fundamentally different from that in adults since it involves parents (or caregivers), siblings, peers and also incorporates developmental processes such as puberty (Modi et al., 2011). It is associated with lower parental socioeconomic status and lower parental education levels (Modi et al., 2008). In NF's situation however, this was unlikely to be the case because the father was gainfully employed and could afford to look after the family and the mother had a diploma level of education.

Non-adherence can be measured using both direct and indirect methods, however currently, there is no gold standard method (Osterberg and Blaschke, 2005). Non-adherence in children can be assessed in similar ways to adults although depending on the child's age and cognition, modifications may need to be made. Adherence can be measured directly by directly observed therapy, measurement of concentrations of a drug or its metabolite in blood or urine, and detection or measurement in blood of a biologic marker added to the drug formulation. These approaches, although plausible, are expensive, burdensome to the health care provider, and while seemingly objective, they are susceptible to distortion by the patient (Osterberg and Blaschke, 2005). The indirect methods include: directly asking the patient or the caretaker how easy it is for him or her to take prescribed medication, assessing clinical response as was the case in N.F who initially was not responding but when adherence was stepped up an improved clinical response was observed as a decrease in seizures, performing pill counts, ascertaining rates of refilling prescriptions, collecting patient questionnaires, using electronic medication monitors, measuring physiologic markers, and asking the patient (or their caregiver) to keep a medication diary such as noting on charts as was done in hospital to manage N.F. These indirect methods are all relatively easy to use however they are prone to recall bias, misinterpretation and throwing away of tablets prior to a clinic visit if a pill count is known to be done, all of which may misrepresent the level of the patients' adherence. Besides the patient's clinical response and physiologic markers as a measure is confounded by many other factors that can account for the observed clinical and response (Asadi Pooya, 2005; Osterberg and Blaschke, 2005). Because of the repercussions of non-adherence and the fact that it can be reasonably measured using simple methods

and addressed through evidence-based interventions, it is imperative that clinicians consider routinely assessing adherence to AEDs in all children with epilepsy in their care (Modi et al., 2011) and thus helping those that are still getting challenges with adherence.

To counter non adherence, in a health setting, the following interventions have been reported to be helpful: Educating patients' or their caregivers on their illness, so they get to understand why they are taking their medications, as well as any possible side effects of their medications as the lack of information in many cases is responsible for the poor adherence (Asadi-Pooya 2005; Jin et al., 2008). In addition to giving information, it would be ideal if these health workers fostered a good therapeutic relationship with their parents as this has been found to improve adherence (Jin et al., 2008). In addition, patients who miss appointments are a special group and these often need the most help to improve their ability to adhere to a medication regimen. Such patients often benefit from assistance in clinic scheduling and "cue-dose training" such as meal times, news time to optimize their adherence (Osterberg and Blaschke, 2005). Also, as much as possible, clinicians should aim at simple or easier to manage dosing schedules as simple dosing helps to maximize adherence (Asadi-Pooya 2005; Osterberg and Blaschke 2005). Where possible, it would be good if a patient had their doctor that routinely reviews them since multiple physicians or healthcare providers prescribing medications decreases patients' confidence in the prescribed treatment (Jin et al. 2008). This may not be feasible in a public hospital such as Mulago where N.F was seen as health workers in the clinics keep changing as per the schedule. Finally, although a clinician's impact is limited as far as the socioeconomic situation of families is concerned, he/she is charged with the need to recognize that limited or a lack of financial resources plays a role in non-adherence in children with epilepsy. Therefore proactive improved adherence interventions are especially important for families that are financially incapacitated (Modi et al., 2011).

Generally, in pediatric psychiatric patients such as N.F, successful approaches to improved adherence include a combination of educational interventions (involving both patient and family), cognitive-supportive interventions, and the periodic use of reinforcement techniques (Osterberg and Blaschke 2005) as opposed to one technique.

CONCLUSION

In conclusion, it can be deduced that to improve the patient's ability to follow a medication regimen, all potential barriers to adherence need to be considered. An expanded view that takes into account factors under

the patient's control as well as interactions between the patient and the health care provider and between the patient and the health care system will have the greatest effect on improving medication adherence (Osterberg and Blaschke 2005). Basic education about epilepsy goes a long way in reducing stigma that often leads to non-adherence and the need to adequately train the health care workers if people with epilepsy are to be correctly diagnosed and subsequently, appropriately treated cannot be overemphasized since adherence to wrong medications will serve no purpose.

REFERENCES

- Asadi-Pooya A (2005). Drug compliance of children and adolescents with epilepsy. *Seizure*, 14(6), pp.393–5. Available at: <http://www.sciencedirect.com/science/article/pii/S1059131105000968> [Accessed October 25, 2014].
- CDC (2014). CDC - Epilepsy - Basics - FAQs. Available at <http://www.cdc.gov/epilepsy/basics/faqs.htm> [Accessed October 23, 2014].
- Duggan M (2010). Epilepsy in rural Ugandan children seizure pattern, age of onset and associated findings. *African Health Sciences*, 10(3), pp.218–225.
- Hovinga CA, Asato M, Manjunath R (2008). Association of non-adherence to antiepileptic drugs and seizures, quality of life, and productivity: Survey of patients with epilepsy and physicians. *Epilepsy and Behavior*, 13(2), pp.316–322.
- Jin J, Sklar GE, Oh VMS (2008). Factors affecting therapeutic compliance: A review from the patient's perspective. *Therapeutics and clinical risk* Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/pmc2503662/> [Accessed October 25, 2014].
- Meyer A.-C, Dua T, Ma J (2010). Global disparities in the epilepsy treatment gap: a systematic review. *Bulletin of the World Health Organization*, 88(4), pp.260–6. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2855595&ndtool=pmcentrez&rendertype=abstract> [Accessed October 24, 2014].
- Modi A, Morita D, Glauser T (2008). One-month adherence in children with new-onset epilepsy: white-coat compliance does not occur. *Pediatrics*. Available at: <http://pediatrics.aappublications.org/content/121/4/e961.short> [Accessed October 25, 2014].
- Modi A, Rausch J, Glauser T (2011). Patterns of nonadherence to antiepileptic drug therapy in children with newly diagnosed epilepsy. *JAMA*. Available at: <http://archneur.jamanetwork.com/article.aspx?articleid=899377> [Accessed October 24, 2014].
- Osterberg L, Blaschke T (2005). Adherence to Medication. *The new England journal of Medicine*, 353, pp.487–497.
- World Health Organisation (2004). *EPILEPSY IN THE WHO AFRICAN REGION: Bridging the Gap The Global Campaign Against Epilepsy " Out of the Shadows ."* World Health Organization.

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