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Caregivers' adherence to carbamazepine treatment for children and adolescents suffering from mental health disorders

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ABSTRACT

Carbamazepine is a well considered drug as mood stabilizer, having antipsychotics and antiepileptic effects. It has been mainly used in treating hyperactivity, aggression, dysphoric mood and pattern of rapid cycling. The purpose of this study is to evaluate adherence to the carbamazepine treatment in children/adolescent suffering from mood disorders and the role of caregivers in the treatment solvability. Children/adolescent, outpatients, from CAPSi – Sorocaba/SP and their caregivers were invited to take part in this study. Data collection was carried out in three phases: identifying patients through the analysis of medical records and the usage of WHO ICD-10; applying a structured interview mentioning the patients' socio demographic conditions; blood collection for carbamazepine serum measurement using FPIA technique. The children/adolescent present emotional and behavioral disorders, usually starting in the childhood or adolescence; it was observed, by the data collected in the interviews, that most caregivers understands the treatment; results of the serum measurement however, showed that 46.6% of the children presented serum measurement outside the therapeutic range. The results show that there are difficulties relating to the caregivers regarding compliance to the treatment with carbamazepine in children suffering from mood disorder, requiring the need of an intervention process in order to guarantee treatment

Keywords: Carbamazepine, Caregivers adherence, Children, Mood disorders.

INTRODUCTION

Carbamazepine (CBZ) is specially efficient for the treatment of the hyperactivity disorders, lack of attention, aggressiveness, dysphoric humor and rapid-cycling pattern, as well as presents antimanic and anticonvulsant effects, and it is therefore indicated for the treatment of children and adolescents with various psychiatric disorders (Davanzo *et al.*, 2004; Gerenutti *et al.*, 2008). It is concerned as a mood stabilizer, being an option to the ineffectiveness or intolerance to lithium. This drug seems to have effects on the motor activity, reducing aggressiveness and increasing concentration capacity (Kowatch *et al.*, 2000; Kowatch *et al.*, 2005). It is recommended to have a control on the CBZ serum levels and, in this regard, special care must be taken when it is associated to haloperidol, phenobarbital and heophylline (Fu-I, 2007).

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The therapy adherence in the Childhood and Adolescence Mental Health area is directed related to the treatment success, caregivers' contribution is of primary importance for it to happen (Rohde *et al.*, 2004). The therapy adherence express the level in what the patient's response matches the medical prescription, both in the pharmacological and behavioral aspects (Krummenacher *et al.*, 2012). The adherence is set up by measures towards the patient's adaptation to the therapeutic program (Dunbar- Jacob *et al.*, 2001; Fleitlich, Goodman, 2004; Osterberg, Blaschke, 2005). The non-adherence to the treatment has been responsible for deep frustrations in psychiatry. In this respect, the objective of the present study is to identify the caregiver's adherence to the treatment with carbamazepine for children/adolescents presenting psychiatric disorders, under outpatient medical care, in two units of the Center of Psychosocial Attention to Children and Adolescents (CAPSi) at the Sorocaba Association for the Social Pro-reintegration of the Child.

MATERIAL AND METHODS

The study was held during a period of 12 months with patients aged between 05 and 16, coming from two units of the CAPSi at the Sorocaba Association for the Social Pro-reintegration of the Child: the CAPSi Child Association and the CAPSi at North Zone, as well as their respective caregivers. The criteria for the patients inclusion in this study were: CBZ continuous and regular use prescription; caregiver aged 18 or over; and the frequency of the child/adolescent to the monthly medical appointments. The inclusion of the caregivers was due to the lack of cognitive conditions of the patients to follow their own treatment. On the other hand, disabled caregivers that might make the communication difficult were left out. The study was approved by the Committee on Ethical Research with Humans of the University of Sorocaba (CEP-UNISO) under protocol 026/08. In order to evaluate the caregivers' acceptance, three tools were chosen: data collection records; interview with caregivers after regular medical appointment of the child/adolescent and two serum dosages of CBZ.

Data collection records were realized in order to make a clinical classification of the children/adolescents according to the diagnosis code ICD-10 (WHO – World Health Organization, 1993).

Interviews with the patients' caregivers were realized by means of a structured questionnaire, elaborated by the researchers. This interview tool constituted of open questions and scores were used to identify complying and non-complying caregivers, based on the Used Drug Analysis (UDA) (Levy, Feld, 1999; Vermeire, 2001; Leite, Vasconcellos, 2003). By the fact that the AMU analysis may be overestimating the portion of patients considered as most compliant, it was decided to classify the level of adherence only by the administration reporting and knowledge of the drug's name. The cases where the caregiver reported to have administered higher or shorter quantities of the drug, as well as have administered another kind of drug besides the prescribed one

or even given no medicine at all, were considered as non-compliant to the treatment.

The two CBZ serum dosages were done at the Unimed Sorocaba Laboratory, by fluorescence polarization immunoassay (FPIA). The serum levels of CBZ considered for evaluation of the treatment adherence were compared to the therapeutic range between 4 and 12 ug/mL. There was interval of six months between the first and the second CBZ serum dosages.

Statistical analysis

A non-parametric test, McNemar (Ayres *et al.*, 2001)), was applied among CBZ low serum dosage proportions.

RESULTS

This study comprises 29 caregivers to children/adolescents from the emotional and behavioral disorders group (F90-F98). Table 1 indicates that the comorbidities are present in 75% of the cases, 34.4% of the patients have undergone to previous treatment and 89.5% received a diagnosis during the first year of treatment.

Table 1: Clinical characterization of children/adolescents from CAPSi -Sorocaba, according to ICD-10 (n: 29).

	G40	F30- F39	F40- F48	F60- F69	F70- F79	F80- F89	F90- F98
Main Diagnosis	01	03	01	01	06	03	14
Comorbidities	-	-	-	01	02	06	13
Previous treatments	01	02	-	-	03	-	10
Diagnosis in the first year of treatment	01	03	01	01	03	03	14

ICD-10 (WHO). G40: Epilepsy; F30-F39: Humor disorder (affective); F40-F48: Neurotic disorder related stress and somatoforms; F60-F69: Personality and behavioral disorder in adults; F70-F79: Mental retardation; F80-F89: Psychological development disorder; F90-F98: Emotional and behavioral disorders starting usually during childhood or adolescence. In the total score number referring to diagnosis, we have added up the main diagnosis and comorbidities, to show that there are children with two or more ICD.

Table 2 shows the caregivers' adherence to the drug treatment, where the percentage of non-complying caregivers was considered lower than the percentage of the most complying ones and 79.31% of patients make use of two or more drugs.

Table 3 indicates the caregivers' understanding about the treatment and 89.6% of these caregivers understood the proposed drug treatment; 86.2% understood the medicine prescription objective; 79.3% understood its side effects and 96.5% understood the drug administration method. Thirty patients participated in the first collection (A) to CBZ serum dosage. Nine of them (30%) presented serum levels under the recommended therapeutic range while 0.1 was over that range. In the second collection (B), only 23 patients showed up, thus, confirming the treatment withdrawal of 03 children/adolescents in the CAPSi; 13 patients (56.52%) kept serum level under the recommended therapeutic range; 01 presented a lower level and 01 kept the serum level over the mentioned range (Figure 1).

Table. 2: Profile of adherence of caregivers of children/adolescents treated both with monotherapy and politherapy in CAPSi- Sorocaba (n: 29).

Caregivers more adherent to the children treatment (n: 25)	Therapeutic Regimen			
	Monotherapy		Politherapy	
	n	%	n	%
Know the name, dose and/or use directions	04	80	18	90
Know the name, other data are insufficient and incorrect	-	-	-	-
Give insufficient data	01	20	02	10
Total	05	20	20	80

Caregivers less adherent to the children treatment (n: 04)	Therapeutic Regimen			
	Monotherapy		Politherapy	
	n	%	n	%
Administer more	-	-	01	33,3
Administer less	01	25	02	66,6
Administer other drug	-	-	-	-
Don't administer the drug	-	-	-	-
Total	01	25	03	75

Monotherapy: only carbamazepine; Politherapy: carbamazepine plus other drugs

Table. 3: Caregivers profile regarding the comprehension about the drug treatment prescribed to children/adolescent in CAPSi-Sorocaba (n=29).

Information about drugs	Degree of understanding							
	Yes		Yes, partly		Not		No answer	
	n	%	n	%	n	%	n	%
Information about function of drugs	25	86,2	01	3,4	03	10,3	-	-
Information about side effects	23	79,3	-	-	06	20,7	-	-
Information about the administration	28	96,5	01	3,4	-	-	-	-

	Health care professional information							
	Doctor		Nurse or Pharmaceutical		Social worker		Psychologist	
	n	%	n	%	n	%	n	%
Professional	28	89,6	-	-	-	-	01	3,4
Satisfaction with information	26	89,6	01	3,4	01	3,4	01	3,4
Understanding of the treatment	20	68,9	09	31,0	-	-	-	-
Observe the child's progress	19	65,5	10	34,5	-	-	-	-

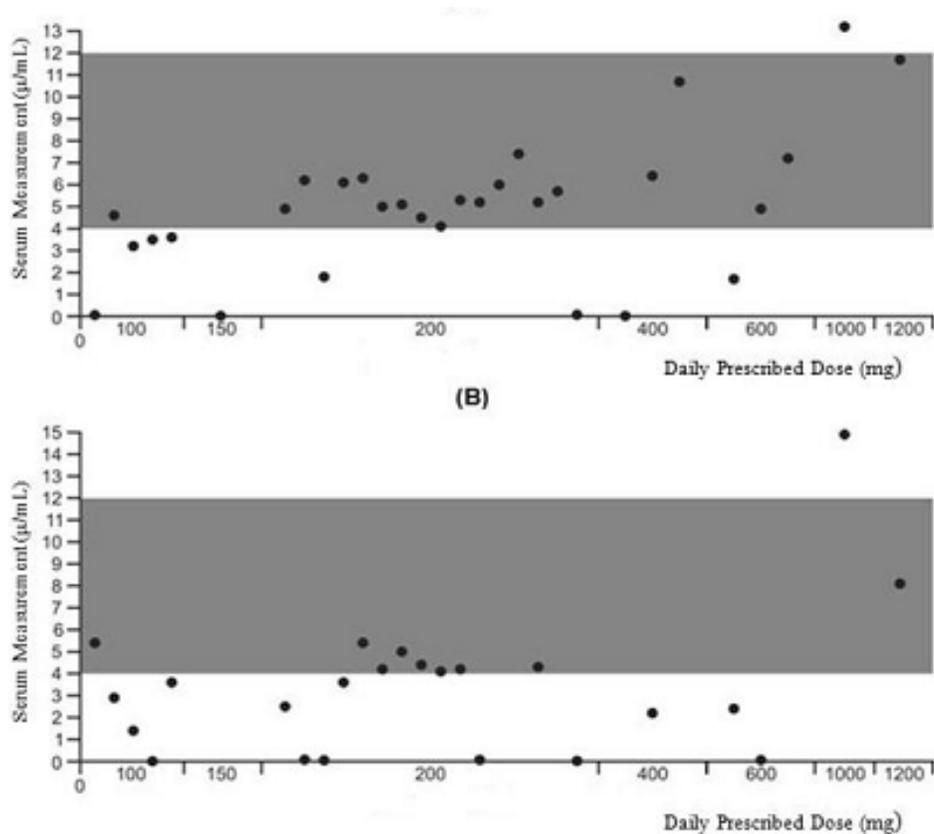


Fig. 1: serum level of carbamazepine (CBZ) in children/adolescent under treatment at CAPSi/sorocaba. Therapeutic range between 4 and 12µ/ml. (A) first dose and (B) second dose (n:29; McNemear's test).

DISCUSSION

The mental and behavioral disorders have major impact on the individuals, families and community, due not only to the disturbing symptoms but also the inability to participate in work and leisure activities, heightened by discrimination (WHO, 2002). Multidisciplinary health teams have a key role in the adherence to extended therapies for mental and behavioral disorders (Kidd, Altman, 2000; Santos, 2005; Moreno *et al.*, 2005; Paula, 2007). CBZ is a long-term-use drug and was chosen to this study because it is distributed free of charge by the Government Health Services at CAPSi, and prescribed for several psychiatric disorders in children.

Direct and indirect methods were used to evaluate the caregivers' adherence to the carbamazepine in long period treatments for children/adolescents with mental disorders. The children/adolescents in this study were classified into groups with emotional and behavioral as well as mood disorders that usually started in the childhood. In addition, these patients showed predominance of irritability and depressing symptoms during short hyperactivity periods and diversity of symptoms. Some of them were also characterized with mental retardation. This was therefore observed that for the caregivers, it is more difficult to face psychiatric problems than the inherent problems of mental retardation (Santin *et al.*, 2005). It should be highlighted that the mental retardation is not exactly a psychiatric disorder, and the association of these pathologies is considered an important risk factor for the caregivers' adherence to treatment.

The high prevalence of comorbidities found in this study is compatible with another studies in the psychiatric of childhood and adolescence areas. This evidences that the children/adolescents having psychiatric disorders fulfill the criteria for more than one psychiatric diagnosis and many of them are submitted to specialized mental treatments (Goodman, Scott, 2004).

The structured questionnaire indicated that the caregivers' age range was diverse, although this data does not seem to influence the adherence. On the other hand, the caregivers presented low educational level this is of great importance once, according to studies on adherence, it has been proved that the higher the educational level, the better the understanding of the treatment related information (Bakirtzief, 1996; Leite *et al.*, 2002).

Although the CBZ treatment is of a long-term nature it was observed a good attendance of the children/adolescents at the CAPSi for the monthly treatment, which was mostly attributed to the patients' mothers.

On the other hand, despite the good attendance to the medical appointments, in some cases, the stress level of the mothers due to the socio-demographic and understanding factors might have been harmful to the adherence level of the treatment. According to studies, the mothers of the mentally disabled children showed higher stress levels than their fathers, because they are responsible for most of the additional care with them (Nara, Dessen, 2001). Some pediatric adherence studies state the fact that the fathers do not understand neither the importance of the

treatment nor the seriousness of the disease, so this becomes an obstacle for the adherence (Jones, 1983; Leite, Vasconcelos, 2003; Brasil, 2007). Some caregivers state that as the diagnosis lacks of a specific laboratory examination, they cannot understand it, and it cannot be proven in the family and social environment.

Although the caregivers show a high availability level to administer the drug, as well as its name and the concerns about administering it properly, there is a lack of understanding about the disease, which may interfere in the adherence.

The adherence behavior in the monotherapy group was below the behavior in the polytherapy group, by evaluating the drug administration associated to the knowledge of its name by the caregiver. Studies indicate that the adherence levels vary a lot depending on the method and adherence concept being applied, staying around 50% for the children population. This leads to the conclusion that factors related to the patient, which are more difficult to control, have always a big influence on the adherence matter (Jones, 1983).

The results in this present work indicate that the caregivers of children/adolescents being attended at CAPSi-Sorocaba showed a satisfactory level of adherence to the drug treatment, when it is evaluated only by the caregiver's report on the drug administration, according to the medical prescription registered on the patient's chart, associated to the knowledge of the name of the drug. Therefore, the two CBZ dosages do not confirm this adherence. The serum level under the expected therapeutic range was the main indication that the adherence level may be jeopardized. This is due to the caregivers' behavior in relation to the understanding of the pathology, associated to the form of administration of the CBZ.

CONCLUSION

Due to the complexity of the problem and considering that social-cultural factors are important in the process of adherence to the drug prescription, one may note that there is an urgent need for a better attention by the healthcare professionals in relation to CBZ treatment adherence and the interventions with the caregivers must focus not only prepare them as caregivers, but also as people that must be cared for. There is a need of an action plan aiming to give more attention to the universality and integrality of health, as well as implementation of services for this children and youth demand, once the psychiatric disorders in childhood and adolescence have shown to be a public health problem and deserve a reflection by all the people that is comprehensively involved with the children and adolescents health.

LIST OF ABBREVIATIONS

CAPSi - Center of Psychosocial Attention to Children and Adolescents

CBZ - Carbamazepine

FPIA - Fluorescence Polarization Immunoassay

ICD - Clinical Classification of the children/adolescents according to the diagnosis code ICD-10

UDA - Used Drug Analysis

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