Review Article

Journal of Epilepsy and Clinical Neurophysiology

J Epilepsy Clin Neurophysiol 2007; 13(3):115-118

Características Clínicas da Esclerose Mesial Temporal em Crianças

Eliana Maria Domingues Brandão*, Maria Luiza Giraldes de Manreza**

Hospital de Clínicas da Faculdade de Medicina da USP

RESUMO

Introdução: Esclerose mesial temporal não é uma causa freqüente de epilepsia de difícil controle em crianças, e a idade de seu aparecimento é incerta. **Objetivo:** Conhecer as características clínicas de crianças com diagnóstico de esclerose mesial temporal. **Material e método:** Foi realizada uma revisão de literatura sobre esta patologia em crianças, sendo encontrado um grupo de quatro artigos que permitem uma visão geral sobre esclerose mesial temporal em crianças e outro grupo de sete artigos (relatos de caso ou series pequenas) onde esclerose mesial temporal foi diagnosticada até os cinco anos de idade. **Resultados:** No primeiro grupo avaliado, crise febril foi o antecedente mais freqüente, seguido por estado de mal epiléptico, e a semiologia das crises foi caracterizada por automatismo oroalimentar, automatismo gestual, parada da movimentação e fenômeno motor. O grupo de crianças com esclerose mesial temporal diagnosticada até os cinco anos se destacou pela alta incidência de estado de mal epiléptico (84,6%), pelo número de crianças com desenvolvimento neuropsicomotor alterado (46%), e por lesão na maioria dos casos bilateral (53,8%), sugerindo que a forma bilateral da esclerose mesial temporal possa ser uma patologia distinta, e não necessariamente a progressão de um quadro inicialmente unilateral. Outro ponto de destaque neste grupo é a documentação por ressonância magnética de edema em hipocampo após estado de mal epiléptico e posterior atrofia desta estrutura. **Conclusão:** Esclerose mesial temporal pode aparecer ainda na primeira infância e em alguns casos pode apresentar um caráter evolutivo e dependente de uma agressão prévia ao hipocampo.

Unitermos: epilepsia do lobo temporal, criança, adolescente, esclerose, hipocampo.

ABSTRACT

Clinic feature of the mesial temporal sclerosis in children

Introduction: Mesial temporal sclerosis is not a frequent cause of refractory epilepsy in children, and the its start age is uncertain. **Objective:** To understand the clinic feature of children with mesial temporal sclerosis diagnosis. **Material and methods:** It was done a literature review about this pathology in children, and it has been found a group of 4 articles that allow a general view about mesial temporal sclerosis in children and other group of 7 articles (case reports or small series) in which mesial temporal sclerosis was diagnosed until five years old. **Results:** It was evaluated in the first group, febrile seizure that was the most frequent antecedent followed by a status epilepticus and the semiology of the seizures was characterized by oroalimentary automatism, gestural automatism, stunted movement and motor phenomenon.The group of children with mesial temporal sclerosis until five years old stood out due to the high incidence of status epilepticus (84,6%), by the number of children with altered neuro-psycomotor development (46%), and by lesion in most of bilateral cases (53,8%) , suggesting that the bilateral form of the mesial temporal sclerosis might be a distinct pathology, and not necessarily the progression of a unilateral beginning picture. Another important thing to stand out in this group is the documentation by MR in edema in hippocampus after a status epilepticus and posterior atrophy of this structure. **Conclusion:** mesial temporal sclerosis can to appear still in early life and in any cases can to present an evolutional character and dependent from a previous aggression to the hippocampus.

Key words: temporal lobe epilepsy, child, adolescent, sclerosis, hippocampus.

* Médica neuropediatra e neurofisiologista clínica. Plantonista do Departamento de Neurologia do HC-FMUSP.
** Médica assistente. Chefe do Ambulatório de Epilepsia Infantil do HC-FMUSP.
Received Apr 10, 2007; accepted June 01, 2007.

INTRODUCTION

Although mesial temporal sclerosis (MTS) is the most frequent refractory epilepsy in adults with temporal lobe epilepsy,[1] the same does not happen with children where the cause is less frequent.

OBJECTIVE

The objective of this study is a revision of literature about mesial temporal sclerosis in children.

MATERIAL AND METHODS

Was achieved a bibliographic revision using Medline data base and references got in the original articles. The term used were *mesial temporal sclerosis, children, hipocampal sclerosis.*

RESULTS

There are a few studies in the literature about MTS in children. Four articles were found with a number of patient that varied from 10 to 34 as it is shown in Table 1,[2-5] and more 7 articles where MTS was diagnosed before five years old.[6-12]

The semiology of the febrile seizure is described in Table 2. The automatisms were subtle to moderate in children and more pronounced in adolescents.

Reports in MTS have appeared in literature in last years in early age. The studies found with report in MTS in children under five years old are summarized in Table 3, is related to a case report or small case series.

Table 1. Articles about MTS in children

	Articles Summary			
	Lindsay et al.	**Harvey et al.**	**Zix et al.**	**Mohamed et al.**
	N 20	N 30	N 10	N 34
Design	Case series	Case series	Case series	Coorte study
Age	0-17 years	2-17 years	3-15 years	4-20 years
Febrile seizure	No reported	17	6	18
Complicated febrile seizure	No reported	No reported	6	10
SE	16	No reported	No reported	No reported
Other antecedents		9	1	4
School difficulty	10	No reported	8	No reported
Operated patients	20	17	3	32
Surgical results		No reported		
Seizure free	13		3	25
Rare seizures	5		0	4
Without improvement	2		0	3

Table 2. Focal seizures semiology

Focal seizures semiology	**Zix et al**	**Mohamed et al. (children)**	**Mohamed et al. (adolescents)**	**Total**
	N 10	N 17	N 17	N 44
Decreased responsiveness		17	17	34
Motor phenomenon	7	10	12	29
Epigastric phenomenon	5	6	5	16
Versive phenomenon		2	8	10
Oroalimentary automatism	8	17	14	39
Gestural automatism	4	17	14	35
Autonomic phenomenon	6			6
Secundary generalization	3	4	7	14

Table 3. Children with MTS diagnosis before five years old

Studies	N	First seizure age (m)	Diagnosis age (m)	Febrile seizure	Non febrile seizure type	SE	Disturbed Development	MTS	Other lesions
Noria et al., 1994	1	32	45	0	focal	Yes	1	right	yes
Murakami et al., 1996	2	6/4	51/28	1	NR	right 2	NR	NR	no
DeLong e Heinz, 1997	4	30/4,5/6/23	44/36/30/1 No related	0	NR	3 yes/1 no	3	bilateral 4	no
VanLandingham et al., 1998	2	18/3	18/23	2*	NR	yes 2	1	bilateral 2	yes 2
Kanos et al, 2000	1	7m	22m	0	focal	NR	0	right	no
Perez et al, 2000	2	3m 6m	11m 23m	1*	focal	yes 2	1	1 bilateral/ 1 right	yes 2
Sokol et al, 2003	1	<1year	25m	1*	NR	Yes	1l	right	no

NR - no related; SE - status epilepticus; MTS - mesial temporal sclerosis.

DISCUSSION

The specific studies of MTS in children besides a few, they were heterogeneous not allowing a group analysis as a whole.

Among adolescents, febrile seizure stands out the most, with a superior incidence to 50% in the studies about MTS in children. From the 4 revised series, only Lindsay et al.,[2] hasn't pointed out the febrile seizure as the most frequent antecedent, however, at that study was reported that the patients have presented prolonged seizures in the period of validity of central nervous system extra infection, that makes us suppose that were probably febrile seizures. These data contrast with the studies about temporal lobe epilepsy with several etiologies, where the febrile seizure incidence as antecedent of other pathologies except MTS is very low (< 5%)[13,14] or null.[15]

The second most related antecedent to MTS mentioned by the authors is the status epilepticus (SE) and maybe this antecedent has a bigger implication than the attributed to the moment.

The literature about MTS in children[4,5] points out as the most critical phenomena oroalimentary automatism, gestural automatism, decreased responsiveness and motor phenomenon. These manifestations are also common in adults with mesial temporal lobe epilepsy.[16] Epigastric phenomenon and fear although they are frequent manifestations in adults,[17,18] they present less incidence among the children, maybe due to the difficulty of the children in reporting these sensations.

In the revised group, where the MTS was diagnosed until five years old, most of children had their first seizure in their first year of life, and with the exception of the cases reported by Murakami et al.,[7] where lesion side was not specified, the rest of them presented MTS to the right or bilateral. It was not found in the revised literature any factor that explains these associations.

The children described in the literature with the MTS diagnostic before five years old seem to compose a distinct group of that one pointed out in the studies of adults as well as in the studies of bigger children. This group stands out by the high incidence of SE (84, 6%), by the numbers of children with altered neuro-psycomotor development in most bilateral cases (53,8%), suggesting the MTS bilateral form might be a distinct pathology, and not necessarily the progression of a unilateral beginning picture. Another important thing to stand out in this group is the documentation by MR in edema in hippocampus after SE and posterior atrophy of this structure, which indicates that the MTS at least in these children presented an evolutional character and it was dependent from a previous aggression to the hippocampus. How this study is a literature review, and the article number is brief, any consideration can be altered if these series get enlarged or new series get revealed in the future.

CONCLUSIONS

As in the adult, the febrile seizure was the most frequent antecedent in children. SE was the second most frequent related to the appearance of MTS and was related to the edema in hippocampus with posterior atrophy of itself.

The critical phenomena were oroalimentary automatism, gestural automatism, decreased responsiveness and motor phenomenon.

In children with MTS diagnostic until five years old, there was a predominance of bilateral MTS or to the right.

REFERÊNCIAS

1. Babb TL, Brown WJ. Pathological findings in epilepsy. In: Engel Jr J, ed. Surgical treatment of the epilepsies. New York: Raven Press; 1987. p. 511-40.
2. Lindsay J, Glaser G, Peronelle R, Ounsted C. Developmental aspects of focal epilepsies of childhood treated by neurosurgery. Develop Med & Child Neurol. 1984; 26:574-87.

3. Harvey SA, Grattan-Smith JD, Desmond PM, Chow CW, Berkovic SF. Febrile seizures and hippocampal sclerosis: Frequent and related findings in intractable temporal lobe epilepsy of childhood. Pediatric Neurol. 1995; 12:201-6.
4. Zix C, Billard C, Motte J. L'épilepsie liée à une sclérose mésiotemporale chez l'enfant: dix observations. Arch Pédiatr 1999; 6:398-405.
5. Mohamed A, Willye E, Ruggieri P, Kotagal P, Babb T, Hilbig A, Wylie C, Ying Z, Staugaitis S, Najm I, Bulacio J, Foldvary N, Lüders H, Bingaman, W. Temporal lobe epilepsy due to hippocampal sclerosis in pediatric candidates for epilepsy surgery. Neurology. 2001; 56:1643-8.
6. Nohria V, Lee N, Tien RD, Heinz ER, Smith JS, DeLong GR, Skeen MB, Resnick TJ, Crain B, Lewis DV. Magnetic resonance imaging evidence of hippocampal sclerosis in progression: A case report. Epilepsia 1994;35(6):1332-1336.
7. Murakami N, Ohno S, Oka E, Tanaka A. Mesial temporal lobe epilepsy in childhood. Epilepsia 1996; 37(Suppl 3):52-6.
8. DeLong GR, Heinz ER. The clinical syndrome of early-life bilateral hippocampal sclerosis. Ann Neurol. 1997; 42:11-7.
9. VanLandinghan KE, Heinz ER, Cavazos JE, Lewis DV. Magnetic resonance imaging evidence of hippocampal injury after prolonged focal febrile convulsions. Ann Neurol. 1998; 43:413-26.
10. Kanos CC, Keith GD, O'Brien T, Dohan Jr FC. Hippocampal sclerosis in a two-year-old with temporal lobe epilepsy: case report with pathological confirmation. PediatrNeurosur. 2000; 32:316-20.
11. Perez ER, Maeder P, Villemure KM, Vischer VC, Villlemure J-G, Deonna T. Acquired hippocampal damage after temporal lobe seizures in 2 infants. Ann Neurol. 2000; 48:384-7.
12. Sokol DK, Demyer WE, Brown ME, Sanders S, Garg Bhuwan. From swelling to sclerosis: acute change in mesial hippocampus after prolonged febrile seizure. Seizure. 2003; 12:237-40.
13. Harvey AS, Berkovic SF, Wrennall J A, Hopkins IJ. Temporal lobe epilepsy in childhood: clinical, EEG, and neuroimaging findings and syndrome classification in a cohort with new-onset seizures. Neurology. 1997; 49:960-8.
14. Holmes GL. Partial complex seizures in children: an analysis of 69 seizures in 24 patients using EEG FM radiotelemetry and videotape recording. Electroenc and clin neurophysiol. 1984; 57:13-20.
15. Willye E, Chee M, Granström ML, DelGiudice E, Estes M, Comair Y, Pizzi M, Kotajal P, Bourgeois B, Lüders H. Temporal lobe epilepsy in early childhood. Epilepsia. 1993; 34:859-68.
16. Maldonado HM, Delgado-Escueta AV, Walsh GO, Wartz BE, Rand RW. Complex partial seizures of hippocampal and amydalar origin. Epilepsia. 1988; 29(4):420-33.
17. French JA, Willianson PD, Thadani VM, Darcey TM, Mattson RH, Spencer SS, Spencer DD. Characteristics of medial temporal epilepsy: I. Results of history and physical examination. Ann Neurol. 1993; 34:774-80.
18. Jorge CL. Epilepsia com esclerose mesial temporal: aspectos clínicos e fisiopatológicos (dissertação). São Paulo: Faculdade de Medicina, Universidade de São Paulo: 1995.

Endereço para correspondência:
Eliana Maria Domingues Brandão
Departamento de Neurologia – HC-FMUSP
Rua Vicente Oropallo, 61 ap 61 – Colina de São Francisco
CEP 05351025, São Paulo, SP, Brasil
E-mail: sermaju@uol.com.br