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Review

Tap seizures in infancy: A critical review

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ABSTRACT

Tap seizure is a type of reflex myoclonic epilepsy in which seizures are evoked mainly by unexpected tactile stimuli and which is classified among the electroclinical syndromes of infancy. This condition, whose onset is in the first two years of life, is characterized by excellent prognosis and is extremely rare. We reviewed all published articles and case reports on Reflex Myoclonic Epilepsies focusing on touch-induced seizures in order to clarify clinical and electroencephalographic findings. Our aim is to increase knowledge about this specific disorder in order to help pediatricians avoid extensive investigations when making their diagnosis and reassure parents regarding absence of long-term complications.

1. Introduction

Reflex Myoclonic Epilepsy in Infancy (RMEI), first described by Ricci in 1995 [1], is a rare form of electroclinical syndrome which the recent report of the ILAE Commission on Classification and terminology (2017) has categorised as infancy due to the age of onset. Seizures appear during the first 3 years of life in children with normal motor and mental development [2]. They are characterized by reflex myoclonic seizures (Reflex MS) triggered by unexpected stimuli of different types, especially auditory stimuli or combinations of auditory and tactile stimuli. Cases of reflex seizures induced by tactile-only stimulation have been reported in literature too [2,5–11], and named “tap seizure” or “touch-evoked seizures” [5]. This form of epileptic disorder is described as a variant of Myoclonic Epilepsy in Infancy [3] nosographic syndromes. RMEI appears to have an earlier onset, better response to antiepileptic drugs and a positive cognitive outcome [2], but it is not currently recognized as a distinct entity [3] and is still classified among the electroclinical syndromes as myoclonic epilepsy in infancy (MEI) due to the age of onset [4]. We have reviewed all case-reports covering “Tap Seizure” in literature, and focused on the clinical and electroencephalographic features. This review may be of help to pediatricians in recognizing these specific, yet rare seizures, so as to perform a suitable differential diagnosis compared to other seizures burdened by unfavourable outcome.

2. Methods

A literature search was conducted in PubMed for reports published up April 2017, using the following search terms: “reflex myoclonic”, “tap seizure” and “touch induced seizures”, both self-staning and in combination with “epilepsy in infancy”. Articles with seizures due to inherited metabolic disorders or brain malformations and Meeting abstracts were excluded.

The information extracted from each study is reported in the table and includes year of publication, first Author’s name, sample size, seizure trigger, clinical and EEG findings, outcome and follow-up duration.

3. Clinical features

Tap seizure is a rare form of epileptic disorder that appears between the 2nd and 24th month of life in otherwise normal children with a male prevalence. To our knowledge 89 cases of RMEI are reported in literature; 2 papers (9 patients) were excluded because none had touch induced seizures, 59 patients had myoclonic seizures induced by different stimuli, with 27 cases having touch induced seizures only (Table 1). All patients were born to unrelated healthy parents following a normal pregnancy

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Table 1
T: touch; AED: Antiepileptic drugs; NA: not available; SW: spike waves; PSW poly-spike waves; PS: poly-spikes; gen disc: generalized discharges; VPA: Valproic Acid; CZP: Clonazepam; CBZ: Clobazam; ETX: Ethosuximide; LEV: Levetiracetam; tp: therapy; m: months; y: years.

Article	Total patients	Sex		Trigger			Tactile trigger-site	Spontaneus jerks	Ictal EEG features	Interictal EEG features		AED	Follow-up	Duration of RMEI	Outcome
		M	F	T	T + Other	Other				awake	asleep				
Revol '89	2	na	na	2	–	–	face or trunk	yes (1 pt)	na	na	na	na	na	na	na
Ricci '95	6	4	2	–	6	–	face and limbs	yes (4 pts)	SW or PSW gen disc at 3 Hz	normal	PSW gen disc + jerks	3 VPA; 1 CZP	8 m–3 y	4–12 m	normal
Culliver '97	1	–	1	–	1	–	nose, abdomen, upper limbs	yes	SW gen disc	normal	–	VPA	9 m	5 m	normal
Deonna '98	5	4	1	1	3	1	mouth (1 pt)	yes (2 pts)	PSW SW gen disc	PSW	PSW	3 VPA; 1VPA ETX CZP	2.2–10.11 y	4–36 m	normal
Fernandez '99	1	–	1	–	1	–	face	yes (during sleep)	SW gen disc at 3 Hz	normal	PS PSW disc + o - jerks	VPA	2 m	na	reduction of myoclonies
Mangano '04	2	–	–	–	2	–	na	na	SW or PSW gen disc	normal	normal	na	na	na	na
Kurian '03	1	1	–	1	–	–	head	no	PSW gen disc	PSW gen disc + o - jerks	normal	VPA	18 m	1 week	normal
Auvin '06	11	–	–	–	6	5	na	na	PS, PSW or SW gen disc	generalized PS	na	na	na	na	1 cryptogenic partial epilepsy
Darra '06	5	–	–	3	2	–	1 forehead	yes	isolated PSW or SW gen disc	normal	na	na	na	na	na
Kroff '09	1	–	1	1	–	–	palm of right hand	yes	SW generalized discharges at 3–4 Hz	background normal	background normal	VPA	17 m	3 days	normal
Verrotti '13	31	18	13	9	9	13	6 face and head, 2 face and upper limbs, 1 face and limbs	yes (10 pts)	SW or PSW gen disc at 3 Hz	SW PSW gen disc (2 pts)	irregular PSW gen disc (11pts)	23 VPA; 1 VPA + CZP	7.2+ to 5.6 y	4,5–19,4 m	2 language delay 1 language delay and borderline IQ
Caraballo '13	12	7	5	8	2	2	na	yes (6 pts) at drowsiness	PSW gen disc	background normal, SW, PSW or PS gen	increased during sleep	8 VPA	3–22 y	8–13 m (in pts without tp)	normal
Zuccarelli '15	1	1	–	1	–	–	forehead	na	SW or PSW gen disc	na	na	LEV	na	na	better
Turco '16	1	1	–	1	–	–	vertex, glabella, mouth, nose	yes	SW or PSW gen disc	background normal, SW or PSW gen	background normal, SW or PSW gen	na	12 m	6 m	normal