Epilepsy & Behavior 82 (2018) 87–90

Contents lists available at ScienceDirect

Epilepsy & Behavior

journal homepage: www.elsevier.com/locate/yebeh

Brief Communication

Emotional reactivity in mesial temporal lobe epilepsy: A pilot study

Roberta Ciuffini [a,c,*], Paolo Stratta [b], Alfonso Marrelli [c]

[a] Department of Life, Health and Environmental Sciences, University of L'Aquila, Italy
[b] Department of Mental Health, ASL1, L'Aquila, Italy
[c] Clinical Neurophysiology Unit, ASL1, San Salvatore Hospital, L'Aquila, Italy

ARTICLE INFO

Article history:
Received 27 November 2017
Revised 14 February 2018
Accepted 14 February 2018
Available online xxxx

Keywords:
Emotional reactivity
International Affective Picture System
Mesial temporal lobe epilepsy

ABSTRACT

Purpose: Emotional reactivity (ER) is the early rapidly evoked response to a salient emotional stimulus which influences an individual's coping mechanisms, eliciting adaptive responses. We investigated ER in patients with mesial temporal lobe epilepsy (MTLE) in order to obtain an emotion-processing measure that can be related to behavioral regulation.
Methods: We measured ER in twelve patients with (MTLE) using the International Affective Picture System (IAPS), the most widely employed instrument to measure ER, and compared their results with those of a matched sample of healthy subjects. Ninety color pictures depicting events with different kinds of affective valence (pleasant, unpleasant, and neutral) were shown to the patients. Unpleasant and pleasant pictures were also distinguished depending on whether or not they involved social human conditions. The ER was rated on the basis of valence and arousal.
Results: Patients with MTLE showed higher mean arousal and valence ratings than controls for neutral and socially pleasant pictures. A higher valence for unpleasant pictures and a trend toward significantly higher arousal and valence for pleasant pictures were also recorded.
Conclusions: Patients with MTLE seem to feel the environment in a more sensitive and positive way compared with controls, likely in relationship with social functioning alterations.

1. Introduction

Emotional reactivity is the early rapidly evoked response to a salient emotional stimulus, the starting point of the emotional experience and regulation [1]. Emotional regulation, evaluating and monitoring emotional reactions, involves subsequent modifications in the perception of feeling as part of the individual's coping mechanism, eliciting adaptive responses. Emotional dysregulation impairs the ability to function and the quality of life, playing a significant role in psychopathology chiefly in terms of mood disorders. The neural underpinnings of emotional reactivity and regulation have been recently studied using, in particular, neuroimaging techniques without, however, obtaining a general consensus [2].

Meletti et al. [3] demonstrated a deficit of facial emotion recognition (FER) in patients with mesial temporal lobe epilepsy (MTLE). This deficit regarded all the facial emotions investigated (fear, disgust, and anger) with the exception of happiness. The finding was replicated by the same research group in a cohort of seizure-free subjects with 5 or more years of follow-up after temporal lobectomy [4]. A similar result was obtained by Sedda et al. [5] showing impaired negative emotion recognition and no deficits for positive emotions in patients with left temporal lobe epilepsy (TLE).

This widespread impairment for negative emotions has been related to a dysfunction of the cortical–subcortical network engaged in emotion processing including the amygdala, the anterior insula, the orbital frontal cortex, and the somatosensory cortex [6]. These dysfunctions can be related to the "Theory of Mind deficit" with impact to social cognition impairment [7].

Taking into account these observations on emotion perception and decoding, we decided to investigate patients with MTLE using the International Affective Picture System (IAPS) paradigm [8], the most widely used instrument to measure emotional reactivity. We chose this research paradigm to obtain an emotion-processing measure that we could relate to behavioral regulation. We further investigated emotions related to social conditions.

2. Methods

2.1. Study population

Twelve right-handed patients with MTLE (4 females, 8 males, mean age: 48.7, SD: 11.9) were recruited for the study.

* Corresponding author at: UOC Neurofisiopatologia Ospedale San Salvatore, 67010 Coppito, L'Aquila, Italy.
E-mail address: roberta.ciuffini@univaq.it (R. Ciuffini).

https://doi.org/10.1016/j.yebeh.2018.02.011
1525-5050/

Table 1
Demographic, neurophysiological, histopathological and clinical features of the patients.

Case number	Gender	Age	Handedness	Intercritic EEG	Side EEG abnormalities	Etiology	Side affected	Grade (WHO)	Insula	Hypothalamus	Hippocampus	Cingulate cortex	Amygdala	Prodrome	Aura	Seizure semiology
1	F	68	R	DW, SW	L A		L							Irritability	Rising epigastric sensation	Altered consciousness, oroalimentary automatism
2	M	41	R		R A		R								Rising epigastric sensation	Nausea, ictal emeticus
3	M	32	R	TIRDA	L A	Astrocytoma	L	2	Ni	Ni	I	Ni	I			Hypersalivation nausea, vomiting, piloerection, fear
4	F	43	R	DW	R	Astrocytoma	R	1	I	Ni	I	Ni	I			Altered consciousness, dreamy state
5	M	31	R	DW, SW	B A	Oligodendroglioma	R	2	I	Ni	Ni	Ni	Ni			Sadness, pallor, abnormalities of respiration
6	M	48	R	SW	R A		R								Dejà vu	Altered consciousness, oroalimentary automatisms
7	M	55	R	SW	L A		L								Rising epigastric sensation	Flushing, sweating, piloerection
8	M	57	R	TIRDA	B	Oligodendroglioma	R	3	Ni	Ni	Ni	Ni	I	Anxiety		Sense of depersonalization, fear, gestural automatisms
9	F	60	R	DW, Sp	R A	Astrocytoma	R	2	I	Ni	Ni	Ni	Ni		Rising epigastric sensation	Behavioral arrest, altered consciousness, chewing
10	F	39	R	DW, SW	R A		R								Exhilaration	Swallowing, oral automatism
11	M	48	R	DW, SW, Sp	B	Astrocytoma	R	2	Ni	Ni	I	Ni	I			Altered consciousness, oroalimentary automatism
12	M	62	R	DW	R A		R									Altered consciousness, hand automatism

R: right; L: left; B: bilateral; A: anterior; DW: delta wave; SW: sharp wave; TIRDA: temporal intermittent rhythmic delta activity; Sp: spikes; I: involved; Ni: not involved.