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**The development of Consciousness in the Optics of the  
Quantum Theory: Effects of electromagnetic fields  
on Alzheimer pathology**

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**We are all ignorant, but we are not  
ignorant of the same things**

*Albert Einstein*

## Summery

For centuries consciousness has been described by philosophers, psychologists, neurologists, psychiatrists, and others, according to its various functions, and always with an attempt to attribute to it a precise location, that of the brain, where between vigilance and awareness the debate has always been and continues to be open.

Even though the brain is a complex system, all research has always been carried out according to the model of linear causality, that calls for the independent study of organs and functions, never succeeding in the conception of consciousness as emerging from a collective network of structures, functions and interwoven events.

- Today we know that the nervous system is extended to the entire organism and the model of circular causality and the Quantum theory of fields allows us to conceive consciousness as a product of intermolecular interactions, molecules that move through the whole body in a correlated manner producing an electromagnetic field that generates a complex of oscillating signals that stimulate the development of the structure and of consciousness itself.
- **In this optic we develop various work about degenerative pathology, one of these is** Alzheimer's disease, that we try to cure with bio-medicinal equipment ElkMed© 2060, that use Electromagnetic energy in the field of Microwave-frequency band.

# INTRODUCTION

- Alzheimer's disease (AD) is a heterogeneous and progressive neurodegenerative disease. It is one of the most common age-related neurodegenerative diseases and it is characterized by progressive cognitive dysfunction, various behavioral and neuro-psychiatric disturbances that seriously interfere with daily life. Approximately 1% between 65 and 69 years and is higher than 50% in individuals above 95 years (1). It is characterized by irreversible cognitive and physical deterioration. With increasing life expectancy across the world, dementia is a rapidly growing socioeconomic and medical problem. At present, about 33.9 million people world wide have Alzheimer's disease (AD), and prevalence is expected to triple over the next 40 years.

- . The treatment of AD remains a major challenge because of an incomplete understanding of the events that lead to the selective neurodegeneration typical of Alzheimer's brains. Scientists have identified factors that appear to play a role in the development of AD but no definitive causes have been found for this complex disorder. The rapid improvement in cognitive functions in response to Electromagnetic fields suggests that some of the mental deficits of AD are reversible being caused by a functional (i.e., synaptic transmission) rather than a structural (i.e., neuritic plaques) disruption of neuronal communication in the central nervous system (18).

# Aim of the study

- The decrease in cognitive capacities and dementia represent a form of aging ever more frequent. It is calculated that every seven seconds there is a new case of dementia (2) in the world. The Disease of Alzheimer represents the most widespread form. In Italy alone 80,000 new cases are calculated every year (3) and the forecast from now to 2050 by the Alzheimer Association foresees a triplication of those suffering from Alzheimer, that is to say that one out of three old persons in the Western world will be affected (4). At present, pharmacological research has not yet pinpointed an adequate therapy (5) and this is due, in part, to the unknown etio-pathogenesis of the disease and in part to the polymorphism of the clinical manifestations (6). A new support can be seen in the use of Electromagnetic Fields, already known for their effect on live matter (7) (8) (9).



Electromagnetic Fields can modulate muscle activity that sends proprioceptive signals to the spinal nucleus and mesen-cephalic of the trigeminal (1,6,9). An imbalance of these muscles can have an inhibitory action at the level of the associative cortical areas (11). Our experience, through the use of Electromagnetic fields for therapeutic purposes, can confirm that the re-balancing of the masticatory muscles induced through proprioceptive information can have an ameliorative effect on recent memory (15) (16) (17).

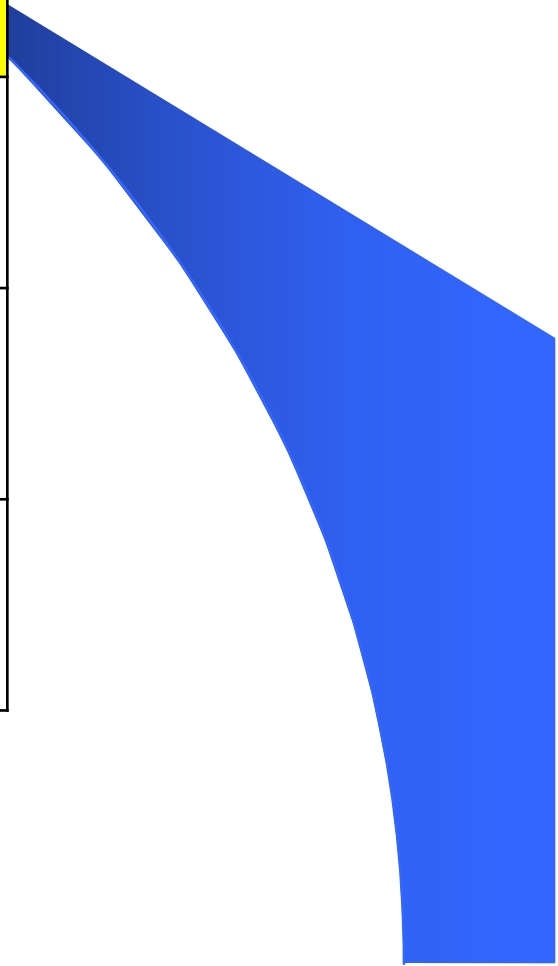
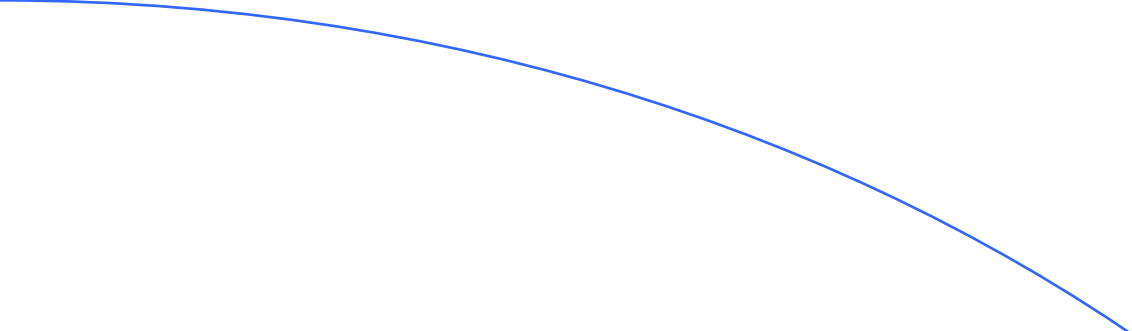
# MATERIALS and METHODS

- In this observation-study bio-medicinal equipment ElkMed© 2060 was utilized: it is an electronic device that can emit, during therapy, two minimum flows of Electromagnetic energy in the field of Microwave-frequency band used: 10,5 - 10,6 GHz.
- **RF Generator:** the frequency bands varies from 10,5 to 10,6 GHz.



# STUDY (DATA ACQUISITION)

- Three patients (Table 1) affected with Alzheimer disease for at least three years were selected, between 72 and 80 years of age, male, presenting various neurocognitive deficits (MMSE 17,7; Table 2), serious disorientation S/T (Table 3) and little collaboration.



<b>Na me</b>	<b>Sex</b>	<b>Age</b>	<b>Date first visit (T.0)</b>	<b>T.1</b>
BG	M	77	09/12/2009	6 mont hs
SC	M	80	13/01/2010	6 mont hs
GE	M	72	10/01/2010	6 mont hs

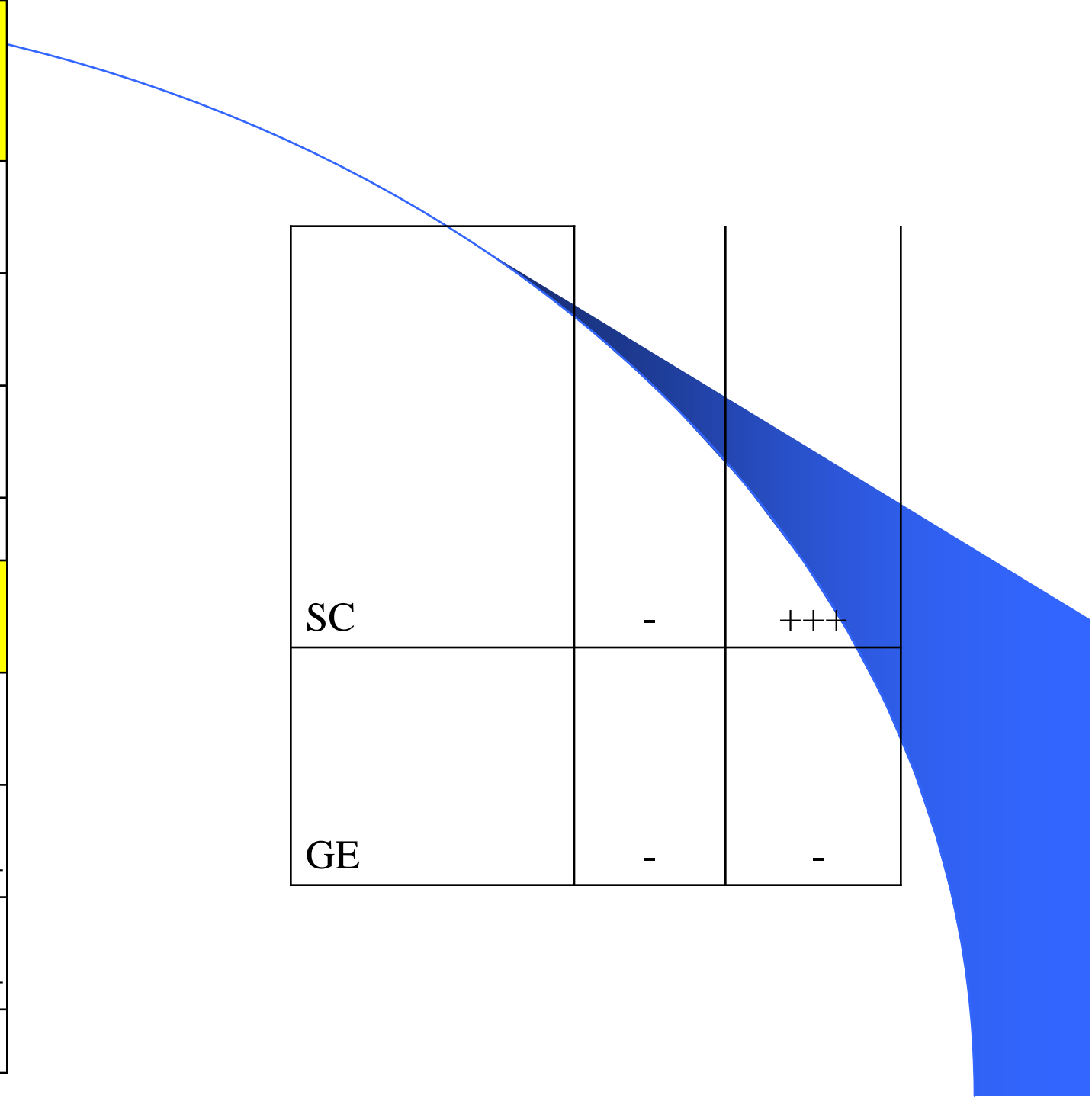
**MMSE(minim ental)**

<b>Name</b>	<b>T.0</b>	<b>T.1</b>
BG	18, 7	19, 7
SC	17, 7	18, 7
GE	-	-

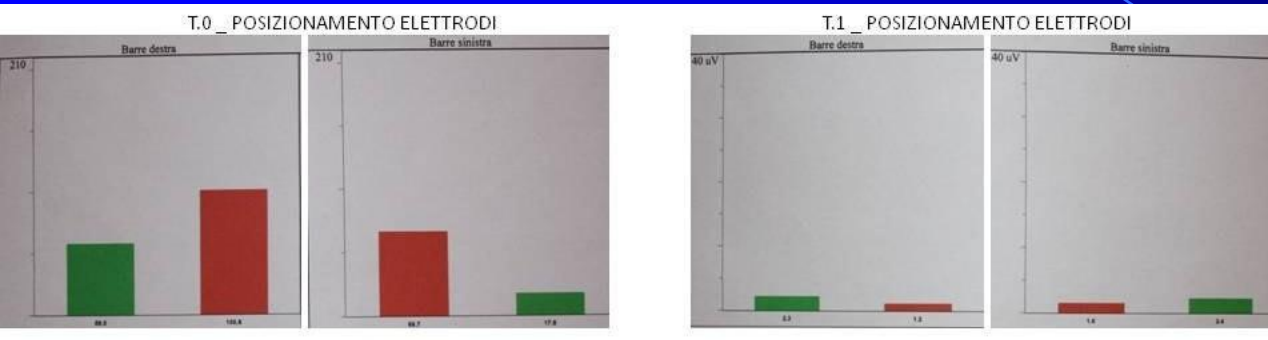
**Orientation S/T**

<b>Name</b>	<b>T.0</b>	<b>T.1</b>
BG	+	++
SC	-	++
GE	-	-

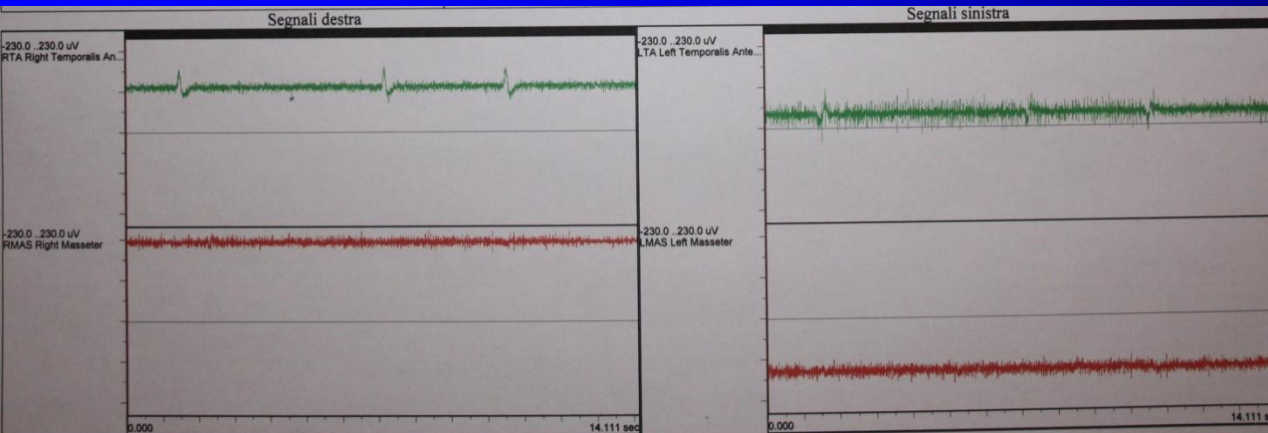
SC	-	+++
GE	-	-

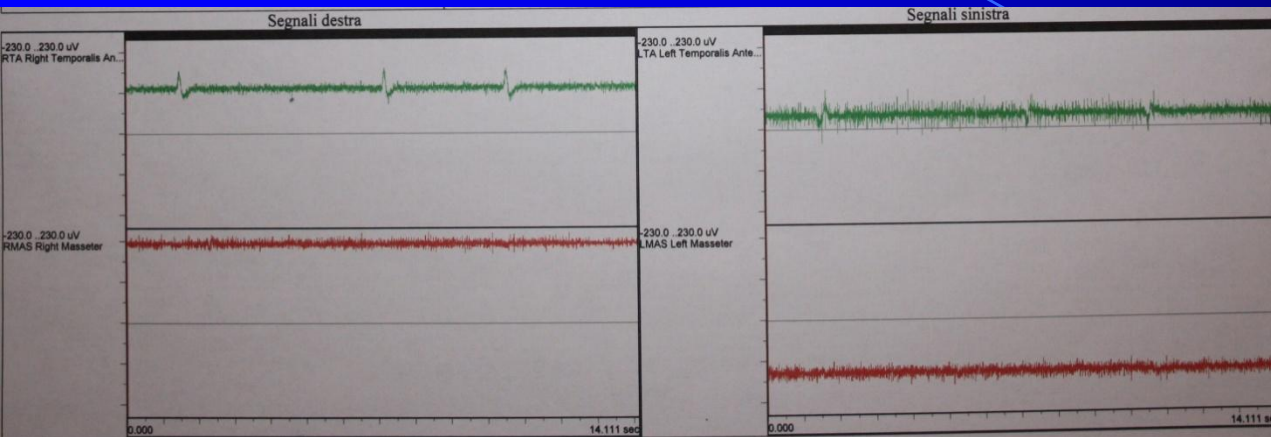


*fig.1* Example Patient GE

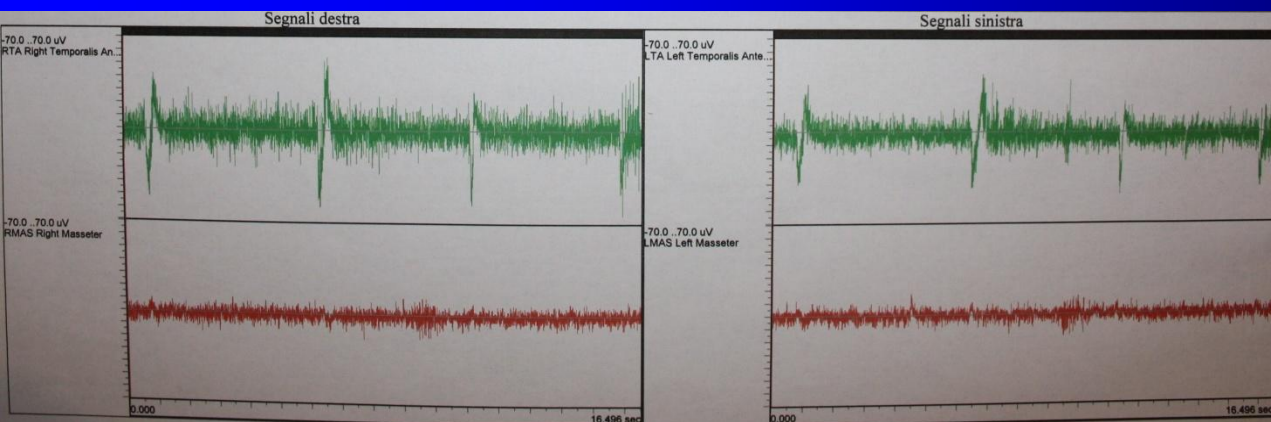


Patient GE to T.0





## Patient GE to T.1



## *Fig.2 Zebris Equipment*

- With this equipment (fig. 2), the evaluations that we have carried out lead us to believe that the presence of an imbalance of the masseter R and L (asymmetry of the muscular tone; fig. 1) determines a reflex of inhibition through the trigeminal-reticular-thalamus-cortical circuit of cognitive factors tied to recent memory (fig. 3).



*Fig.3*

System of communication Trigeminal → ThalamusCortex.  
Reticular Formation → Cerebral Cortex.



Corteccia cerebrale

Talamo

N. Reticolare Talamo

Neurone principale

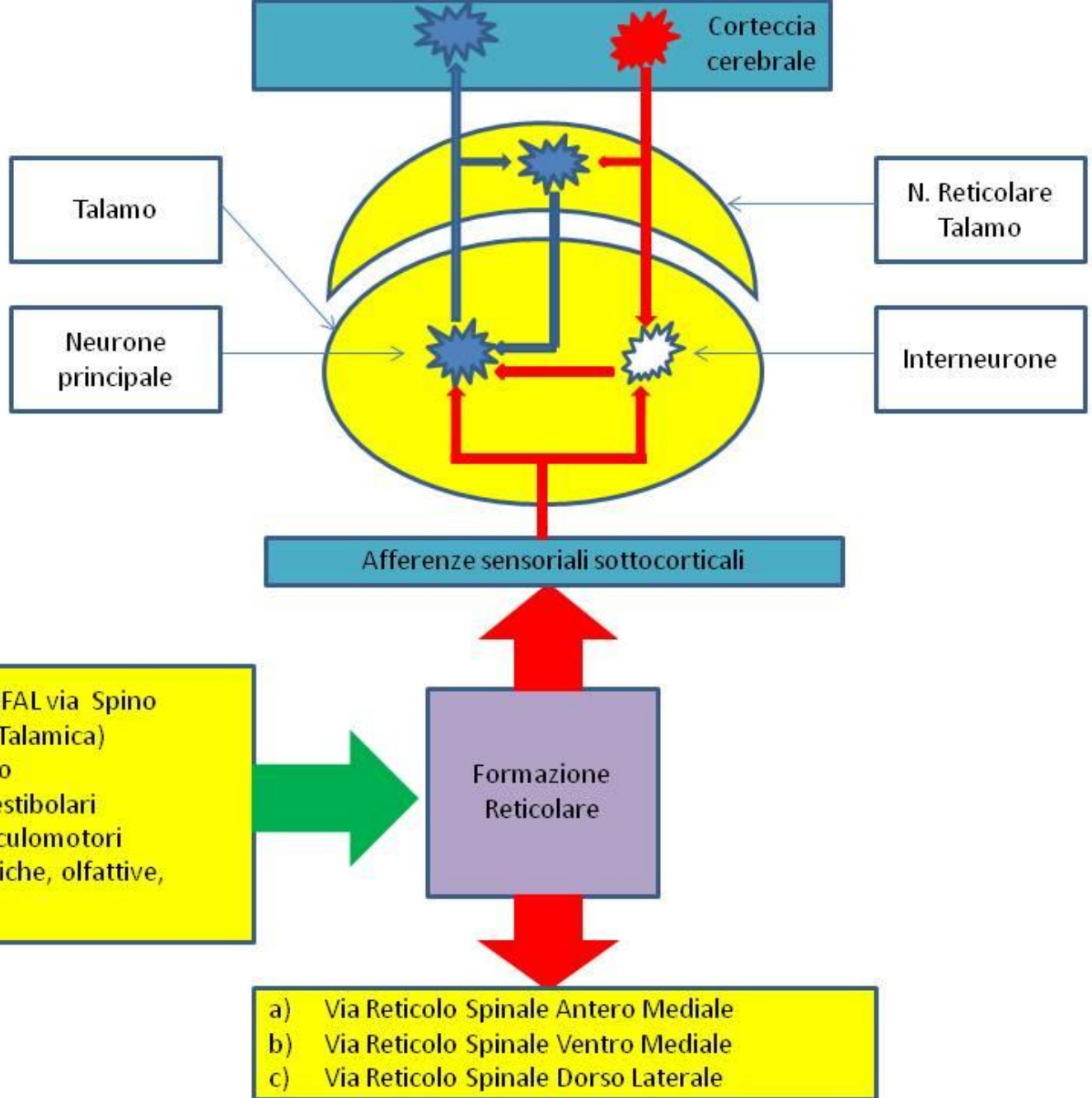
Interneurone

Afferenze sensoriali sottocorticali

Formazione Reticolare

- a) Midollo (FAL via Spino Reticolo Talamica)
- b) Trigemino
- c) Nuclei Vestibolari
- d) Nuclei Oculomotori
- e) Vie acustiche, olfattive, ottiche

- a) Via Reticolo Spinale Antero Mediale
- b) Via Reticolo Spinale Ventro Mediale
- c) Via Reticolo Spinale Dorso Laterale



# Postural evaluation

- The postural evaluation, at the moment of selection (T.0) has demonstrated in all the patients a chronic dysmetria and a functional dysmetria of the rotulea and malleolar reflexes. The EMG of the surface of the masticatory muscles (always T.0) revealed a predominance of side present in all the patients.

# Therapies

- Therefore, pulsating electromagnetic fields were applied (with EBS equipment, fig. 4), through stimulation of the points of auricular therapy (fig. 5) through an electrode, with one session a week. The procedure foresees that during the session two therapies are carried out (15 minutes each, repeated at an interval of 30 minutes), for a period of 6 months and for a total of 24 sessions.

- The treatment includes furthermore the application of an orthoptic bite (literature on bite); we think, in fact, that this is necessary to assist the action of the electromagnetic waves in the re-balancing of the cranial dysmetria, due to the asymmetry of the muscular tone. Fig. 4





# **DISCUSSION and RESULTS**

- **The patients under treatment with CEMP, during the 6 month period of the therapy, continued the pharmacological therapy prescribed, based on sedatives and food integrators. At 6 months from the beginning of the applications (of CEMP and orthoptic Bite) an evaluation was conducted by the UVA Center itself on the clinical evolution of the disease through tests that evaluated the cognitive capacities of the patient (specialistic visits and MMSE). In one case a diagnosis by image was made with functional magnetic resonance in finger tapping (fig. 4).**

# DISCUSSION and RESULTS

- In all three patients an objective improvement was found, as documented by the neurological visit, and furthermore in 2 patients evaluated according to the Mini Mental Test an objective variation in positive was observed (Table 4), supported by an objective improvement of performance/status (Table 5). All 3 patients showed a greater capacity to socialize and relate with the environment.



## *Table 4*

## *Table 5*

- **MMSE(minimental) Name T.0 -T.1 -  
BG18,719,7SC17,718,7GE -**
- **Orientation S/T – Name T.0 T.1  
BG++++SC-++++GE-**
- **-Orientation S/T - NameT.0 T.1 -  
BG++++SC-++++GE-**

# Result

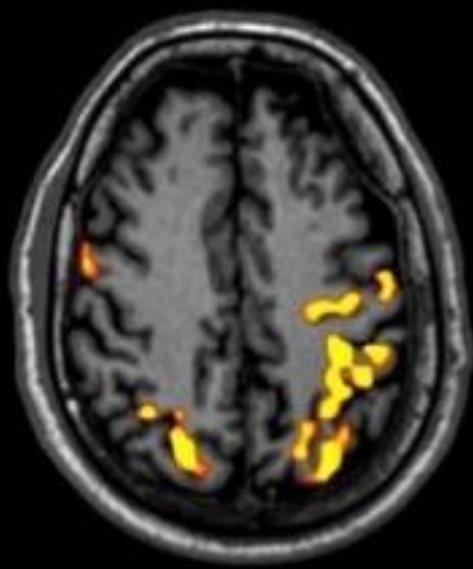
- In the case of patient GE a functional magnetic resonance was done (16)(17) (18) to the encephalo and an improvement in the selectivity of movement was observed (fig. 4). We hypothesized that this fact can be placed in relation to the decrease of areas activated to accomplish the movement of finger tapping (19) (20) (21). At the same time, it was noted that the same areas needed a lower consumption of oxygen to carry out these activities, as on the basis of the neuro-radiological evaluation and in the same way as deduced by the Functional Magnetic Resonance result.

## Result

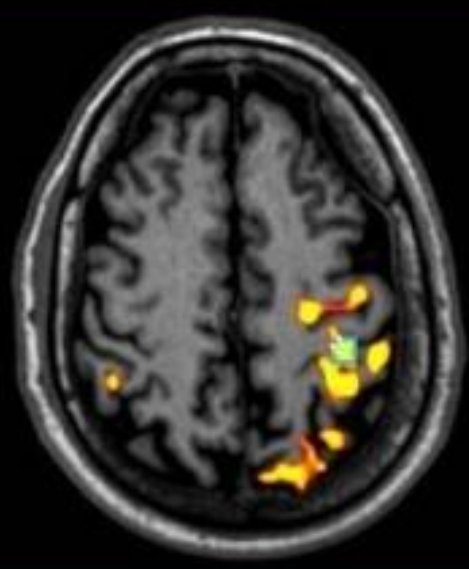
- A cerebral functional Magnetic Resonance was done to T.0 and to T.1.
- In the case of T.0, the resonance showed two small areas of the lacunar type in the periventricular and nuclear right. Significant alterations of the signal in the infratentorial area did not emerge. The expanse of the ventricular cavity in the norm. Larger rather than in the norm the spaces subarachnoid, especially in the frontal area, on atrophic base.
- The functional study done with finger-tapping of the right hand in basal conditions to T.1, after trigeminal stimulation with electromagnetic waves and application of byte, demonstrated regular activation of the cortical areas presupposed to movement with greater selectivity of such areas in control of movement performed after therapy.

BOLD activation(t-test, MC)

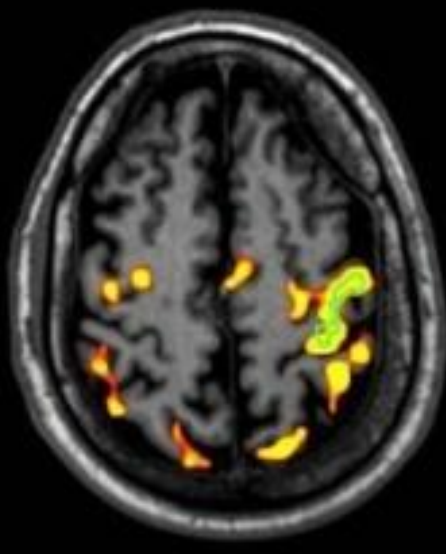
Sc 11, 2 / 14  
T1TFEM



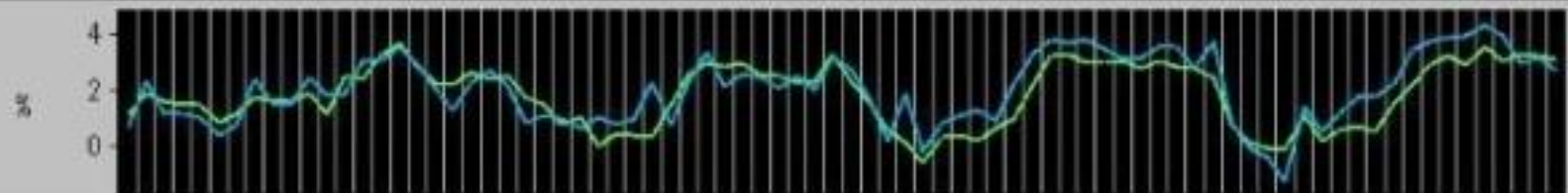
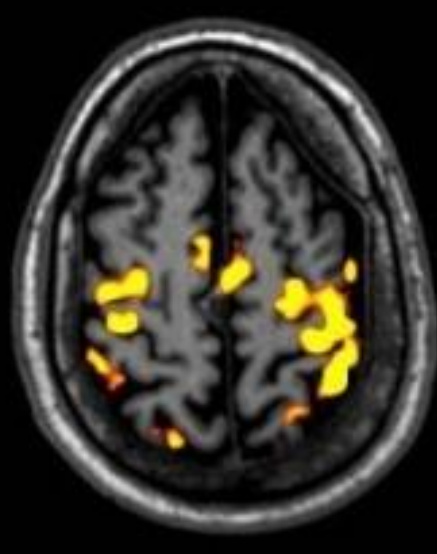
Sc 11, 2 / 15  
T1TFEM



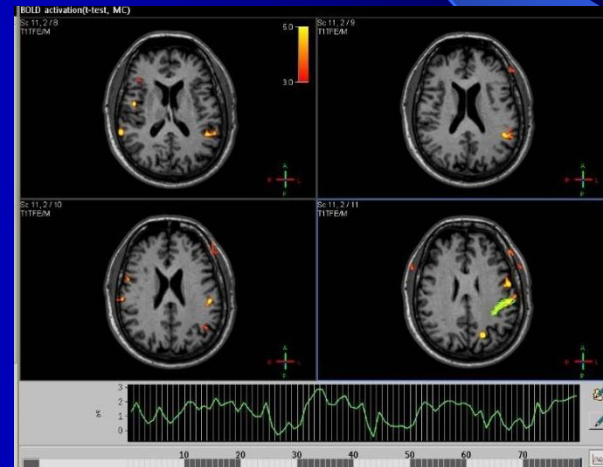
Sc 11, 2 / 16  
T1TFEM



Sc 11, 2 / 17  
T1TFEM



# Patient GE to T.1



- Interpreting the clinical data and MR, we hypothesized that the application of the **bio-physical energy** entails an **optimization of the management of movement** (measurable as minor extension of the affected cerebral areas) which in turn is accompanied by **minor energetic expenditure** (less consumption of oxygen - O<sub>2</sub>).
- As far as the electromagnetic information of the trigeminal areas is concerned, according to the first results presented here, the behavior can be explained as follows: this type of electromagnetic stimulation can induce a cascade process that from the periphery, in centripetal manner, generates a functional rebalancing of the cortical areas altered by the disease.



## Conclusion

- In a chronic degenerative disease like Alzheimer, which seriously disables and involves high individual and social costs, our experience in the use of stimulation with CEMP has led us to believe that through this methodology results with a low economic incidence and without collateral effects can be obtained.
- In view of the anatomical-functional prerequisites, the clinical response seems to confirm the initial hypothesis, that is, that from the proprioceptive signal in a trigeminal area, through the reticular area and the thalamus, a re-balancing of the hypothalamic areas and of the cerebral cortex can be activated.
- From a diagnostic point of view, it can be hypothesized, furthermore, that the use of the echo-doppler intra-cranial is a valid instrument in obtaining further information.
- The exiguity of the sample observed does not allow for certainty in conclusions, but we invite other colleagues to broaden the significance of the clinical and instrumental results and we hope that this study can stimulate the production of further research in this area.



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