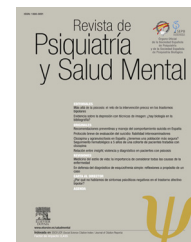




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## ORIGINAL ARTICLE

# Electroconvulsive therapy clinical database: Influence of age and gender on the electrical charge<sup>☆</sup>

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### KEYWORDS

Clinical database;  
Gender;  
Age;  
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therapy;  
Electrical charge

### Abstract

**Introduction:** The influence of age and gender in the electrical charge delivered in a given population was analysed using an electroconvulsive therapy (ECT) clinical database.

**Material and method:** An observational, prospective, longitudinal study with descriptive analysis was performed using data from a database that included total bilateral frontotemporal ECT carried out with a Mecta spECTrum 5000Q<sup>®</sup> in our hospital over 6 years. From 2006 to 2012, a total of 4337 ECT were performed on 187 patients. Linear regression using mixed effects analysis was weighted by the inverse of the number of ECT performed on each patient per year of treatment.

**Results:** The results indicate that age is related with changes in the required charge ( $P = .031$ ), as such that the older the age a higher charge is needed. Gender is also associated with changes in charge ( $P = .014$ ), with women requiring less charge than men, a mean of 87.3 mC less. When the effects of age and gender are included in the same model, both are significant ( $P = .0080$  and  $P = .0041$ ). Thus, for the same age, women require 99.0 mC less charge than men, and in both genders the charge increases by 2.3 mC per year.

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**PALABRAS CLAVE**

Base de datos clínica;  
Género;  
Edad;  
Terapia  
electroconvulsiva;  
Carga eléctrica

**Conclusions:** From our study, it is concluded that the effect of age on the dosage of the electrical charge is even more significant when related to gender. It would be of interest to promote the systematic collection of data for a better understanding and application of the technique.

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### Base de datos clínica de terapia electroconvulsiva: influencia de edad y género en la carga eléctrica

**Resumen**

**Introducción:** A partir de una base de datos clínica de terapia electroconvulsiva (TEC) se pretende corroborar la influencia de la edad y el género en la carga eléctrica administrada en una población determinada.

**Material y método:** Estudio observacional, prospectivo y longitudinal, con análisis descriptivo, de una base de datos que incluye el total de sesiones de TEC bilaterales frontotemporales realizadas con la Mecta spECTrum 5000Q<sup>®</sup> entre 2006 y 2012. Es una muestra de 4.337 sesiones de TEC realizadas a 187 pacientes. Mediante regresión lineal de efectos mixtos se realiza un análisis ponderado por el inverso del número de sesiones de TEC realizadas por cada paciente y por año de tratamiento.

**Resultados:** Los resultados indican que la edad está relacionada con cambios en la carga requerida ( $p=0,031$ ): a mayor edad, mayor aumento de carga. El género también se relaciona con cambios en la carga ( $p=0,014$ ): las mujeres requerirían 87,3 mC menos de media que los hombres. Incluyendo los efectos de edad y género en el mismo modelo, ambos resultan significativos ( $p=0,0080$  y  $p=0,0041$ ), de modo que a igualdad de edad, las mujeres requieren 99,0 mC menos de carga que los hombres, y en ambos géneros aumenta la carga 2,3 mC por año de edad.

**Conclusiones:** Del análisis se obtiene que el efecto de la edad en la dosificación de la carga eléctrica es todavía más significativo cuando se tiene en cuenta el género. Es de interés promover la recogida sistemática de datos para un mejor conocimiento y aplicación de la técnica.

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**Introduction**

There is little in the literature about electroconvulsive therapy (ECT) data base analysis, although the majority of studies published underline the advantages of such an analysis.<sup>1</sup> It has been said that having clinical ECT databases available would make it possible to gain more knowledge about clinical practice and implement programs to improve the quality of the technique.<sup>1</sup>

The majority of the factors that may alter the initial convulsive threshold in ECT were described in a meta-analysis.<sup>2</sup> Considering only prospective studies as the inclusion criteria, the levels of convulsive threshold are significantly associated with the following factors: sex,<sup>3,4</sup> age,<sup>4,5</sup> accumulated treatments,<sup>4,6</sup> electrode location,<sup>5,7</sup> dynamic impedance,<sup>8,9</sup> electrical stimulation parameters<sup>10–13</sup> and sleep deprivation.<sup>14</sup>

Of these factors, male sex<sup>4,15,16</sup> and bilateral placement of the electrodes<sup>7</sup> were the factors associated the most closely with a higher initial convulsive threshold.<sup>2</sup> Other factors that influence this include the anaesthetic drugs used, oxygenation or concomitant medication. Some drugs such as benzodiazepines and anticonvulsants raise the convulsive threshold<sup>17,18</sup>; and others such as antipsychotics lower it.

This study will quantify the influence of age and sex on the electrical current required for an adequate convulsion, analysing a 6-year clinical ECT database.

**Material and method**

This study is observational, prospective and longitudinal, with descriptive analysis. Its sample is the total number of ECT sessions in a Psychiatric Department from April 2006 to January 2012.

The sample includes patients treated using ECT while admitted to hospital as well as for maintenance therapy, with different psychiatric diagnoses. Propofol was used as the anaesthetic and the myorelaxant was succinylcholine. Psychoactive drugs were used in practically all of the cases, together with other medication when necessary. Restimulation was used once when it was needed, and some patients had received ECT beforehand.

The spECTrum 5000Q<sup>®</sup> Mecta apparatus was used, with bilateral frontotemporal electrodes. The study variables were recorded during each ECT session in a computerised database.

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