

## ELECTROCONVULSIVE THERAPY PRACTICE IN SERBIA TODAY

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### SUMMARY

This is the first survey of the practice of electroconvulsive therapy (ECT) in the Republic of Serbia. A retrospective chart review was undertaken including all patients having received ECT in Serbia in 2012. Only one center in Serbia offered ECT in 2012 to a total of 54 patients (54% women). Thirty-six (36) patients received acute ECT treatment and eighteen (18) patients maintenance ECT, yielding a ECT utilization rate of 0.05/100.000 population. ECT was delivered with a modern square-wave (brief pulse) machine with EEG and ECG monitoring. In all cases the electrode placement was bifrontal and treatment modified (with anesthesia). The most frequent indication was recurrent depressive disorder (66.7%) for both acute and maintenance treatment. The limited availability of ECT in Serbia raises serious concerns. Provision of updated and effective treatment modalities for severe psychiatric disorders is crucial and the need for additional ECT services in Serbia is urgent.

**Key words:** electroconvulsive therapy – ECT – Serbia – survey - brief pulse - major depressive disorder

**Abbreviations:** ECT: electroconvulsive therapy; EEG: electroencephalogram; EMG: electromyogram; ECG: electrocardiogram; ICD-10: International Classification of Disorders, 10<sup>th</sup> edition; IC: informed consent; MMA: Military Medical Academy

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### INTRODUCTION

Surveys concerning the use of electroconvulsive therapy (ECT) have shown wide variations between countries and even between different regions within countries. The situation in Europe exemplifies this: in Slovenia ECT is banned (Gazdag et al. 2012), while in Sweden (Socialstyrelsen 2010) and Belgium (Sienaert et al. 2006) ECT appears utilized to a larger extent. Indications for ECT also show a heterogeneous picture. Convulsive therapy was first introduced in the treatment of schizophrenia (Gazdag et al. 2009), but it soon turned out that it is even more effective in treating affective symptoms (Bennett 1939). While in certain Central-East-European countries schizophrenia has remained its first indication (Baudis 1992, Gazdag et al. 2004, Golenkov et al. 2010), in Western Europe affective disorders are the main indications (Leiknes et al. 2012).

The use of ECT in Central-Eastern Europe has gained increasing attention over the past decade, although the first report from the region dates back to 1992 (Baudis 1992). Except for Slovakia (Dragasek 2012) and the Czech Republic (Köhler 2012), recent surveys revealed very low ECT utilization rates in this region (Gazdag et al. 2004, 2009, Hranov et al. 2012). A recent comprehensive review on the use of ECT

(Leiknes et al. 2012) concluded that the lowest utilization rate worldwide was reported from Poland (Gazdag et al. 2009). In Romania (Gazdag et al. 2011) and Bulgaria (Hranov et al. 2012) the access to ECT is limited. Professional attitudes toward ECT in Hungary (Gazdag et al. 2004) and Romania (Gazdag et al. 2011) were less favorable compared to those reported from in Chuvash Republic (Golenkov et al. 2010). Representation of ECT on Hungarian websites was found overwhelmingly negative (Takács et al. 2012) probably reflecting attitudes characteristic of the whole region.

To the best of our knowledge, there have been no comprehensive on ECT practice in Serbia. Serbia has a population of 7.2 million. In 2012, there were about 35,000 inpatient psychiatric admissions to 5,441 beds that represent 13.7% of all hospital beds in Serbia (Annual Report Institute of Public Health, 2012).

The first ECT service in Serbia was established in 1946. In the following decades up to 1975, mostly unmodified ECT was delivered in a few centers. By the late 1990s, almost all ECT services ceased to function due to organizational or financial difficulties. Only the Department of Psychiatry, Military Medical Academy (MMA) in Belgrade has offered ECT on the continual basis. This survey focused on the use of ECT at the MMA in Belgrade in 2012.

## The legal framework for ECT in Serbia

All adult patients are required to sign a separate informed consent (IC) form for ECT and anesthesia (National Guidelines for the Treatment of Depression 2011, pp 38-9.). ECT is not allowed for patients younger than 18 years of age. In case if a patient is not fit to consent, the signature of his/her close relative is accepted. Local ethics committees, which are mandatory for every health care institution in Serbia according to Health Care Law, approve the content and form of IC, while the Serbian Ministry of Health is responsible for the license of every ECT service. There is no nationwide ECT protocol, but the Mental Health Act, which was drafted two years ago, includes a chapter (Number 55) on ECT stipulating that ECT is recommended only when all other treatment modalities have proven ineffective. IC is mandatory when ECT is considered, and only modified ECT is legal.

## METHODS

The survey instrument (available upon request to Gabor Gazdag) for this retrospective analysis was modified from the one used in a similar Hungarian investigation (questionnaire to assess age, gender and diagnostic distribution of the treated patients, the average and the highest number of treatments per course, the number of the retreated patients, the frequency of the sessions, the electrode placement, the anesthetic drugs used and the monitoring method; Gazdag et al. 2004) adding eight (8) new questions (on ECT in special populations, maintenance ECT, monitoring of the convulsion and technical issues of the stimulation and pre-treatment evaluation) to the original thirteen (13) items. The follow-up assessments of the patients and side-effects of ECT were beyond of the scope of this questionnaire.

The Central Register of Republic Fund of Health Insurance was consulted as for information on ECT treatment. Information from the Central Register of Republic Fund of Health Insurance for 2012 confirmed that patients received ECT only at MMA, Belgrade. The survey was then sent to two senior psychiatrists and authors of the paper (ZZ and ZS) by way of reviewing medical charts of all patients who received ECT at the MMA in Belgrade in 2012.

## RESULTS

The number of patients who underwent ECT in 2012 was 54 (54% females); their mean age was 48.7 years (range 22-78 years). The total number of single treatment sessions (i.e. session) was 498.

Thirty-six (66%) of the 54 patients received an acute treatment course (a course of ECT given for an acute episode of any psychiatric illness requiring ECT; 0.05/10.000 population), with a mean of 8 sessions (range: 4-18 sessions). The total number of ECT

sessions was 370. Seventeen (47.2%) of the 36 patients continued with maintenance therapy following the acute treatment course of ECT.

One third (n=18) of all patients who had acute ECT in 2011 received maintenance treatment in 2012; the total number of maintenance ECT sessions (continuation ECT) was 81 in 2012.

ECT was not administered to pregnant patients in 2012.

The diagnostic distribution of patients undergoing ECT according to ICD-10 (WHO, 2010) is shown in Table 1.

**Table 1.** ICD-10 diagnoses of patients treated with ECT in Serbia in 2012

Diagnosis	N (%)
Recurrent depressive disorder (F 33.2-3)	36 (66.7)
Bipolar affective disorder-dep. /mixed episode (F 31.4-6)	5 (9.3)
Paranoid schizophrenia (F 20.0)	5 (9.3)
Organic mood (affective) disorder (F 06.3)	4 (7.3)
Schizoaffective disorder-dep./mixed type (F 25.1-2)	2 (3.7)
Other diagnoses (Unspecified nonorganic psychosis F 29)	2 (3.7)
Total	54 (100)

## Pre-treatment assessment and description of the ECT intervention

The following pre-treatment investigations according to local guidelines were mandatory at the MMA: general physical health check such as, blood test, liver function test and renal function tests, ECG, EEG and medical, neurological and ophthalmological consultations.

ECT was performed with a Thymatron System IV machine using brief pulses (0.5 msec) with bifrontal electrode placement in all cases. Anesthesia was induced with propofol (2-2,5 mg/kg) combined with the muscle relaxant succinylcholine (1 mg/kg). Atropine premedication (dose of 0.5 mg) was used in every patient, in all sessions.

Convulsions were monitored by visual observation, the cuff method and EEG/EMG recording. For minimal seizure duration 20 seconds was regarded as acceptable. Setting the stimulus dose was based on the "half age" method. ECT was administered three times a week in the context of acute treatment.

## DISCUSSION

To the best of our knowledge, this was the first survey of annual ECT practice in Serbia and all patients having received ECT in 2012 in the country are most certainly included. In comparison to other Central and Eastern European countries, the ECT utilization rate (0.05/10.000) in Serbia is considerably lower than in

Hungary (0.31/10.000), Bulgaria (0.16/10.000) or Poland (11/10.000). On a positive note, all patients in Serbia received treatment with a modern, square-wave machine, as recommended by international guidelines (American Psychiatric Association 2001, Royal College of Psychiatrists 2004) while the corresponding figures in Bulgaria (Hranov et al. 2012), Poland (Gazdag et al. 2009) and Hungary (Gazdag et al. 2004) were 92%, 70% and 10%, respectively. The most frequent indication for ECT in Serbia was Recurrent Depressive Disorder (ICD-10), for both acute and maintenance treatment, followed by paranoid schizophrenia, bipolar affective disorder (depressive and mixed episodes) and organic affective disorders.

Considering the low utilization rate of ECT in Serbia compared to other European countries, it is estimated that with the two additional ECT services joining the MMA (University Psychiatric Clinics in Belgrade and in Kragujevac), ECT will be available for the majority of patients in Serbia who need it. The high suicide rate in Serbia (18.2/100.000 between 2006-2010; Dedic et al. in press) warrants the early and vigorous treatment of affective disorders. ECT is highly recommended for the treatment of severe depression (UK ECT Review Group 2003) and it is reported to be effective in reducing suicidal ideation and intent (Kellner et al. 2005).

After the period of wider use of ECT from 1950 to 1980-90, when Serbia was one of the six republics of Yugoslavia, the use of ECT has significantly declined in the country over the last two decades. ECT was, and still is, considered by many mental health professionals as an outdated treatment modality, which had to disappear thus the majority of Serbian centers did not establish units using modified ECT. Although there have been no studies evaluating public attitude towards ECT in Serbia, the authors' personal experience indicates that ECT is stigmatized, particularly by the public that view "electro-shock" therapy as a "barbaric" treatment justifiable mostly for extremely violent and uncontrollable patients. Providing education about ECT, whether in the form of a video or information pamphlet, has the ability to increase knowledge and improve attitudes toward this treatment (Oldewening et al. 2007)

Teaching ECT in the under- and postgraduate medical curricula at the University of Belgrade consists of two lectures and a short chapter on contemporary ECT in a recent textbook (Marić & Jasovic-Gasic 2010). Earlier textbooks also included information about modified and unmodified ECT (Stojiljković et al. 1964, Jasovic-Gasic 1987, Loga 1989). For many years, neither students nor psychiatric residents had any clinical experience with ECT except for only a small proportion of residents who were attached to the MMA. Nevertheless, it was very promising that the largest academic center in Serbia, the Clinic for Psychiatry, University of Belgrade, organized CME courses on ECT in 2010 and 2011. More than 100 residents and specialist psychiatrists from different parts of Serbia participated in the CME courses watching videos of

ECT treatment and meeting the expert (Gligorovic 2011). The next step is to establish formal training in ECT of sufficient duration, which provides practice under expert's supervision.

## CONCLUSION

ECT has significant value in selected mental conditions where it becomes a life-saving intervention. Provision of updated and effective treatment modalities for severe psychiatric disorders is crucial and the need for additional ECT services in Serbia is urgent.

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