

A Study to Create a User-Friendly Screening Test for Cognitive Side Effects of ECT

Background

- ▶ ECT is one of the most effective treatments for severely depressed patients
- ▶ Attitudes, former beliefs and observed cognitive side effects especially memory problems limit its wider use

Cognitive side-effects

- ▶ Individual
- ▶ Associated for example ECT treatment aspects
 - electrode placement, dose of electricity, frequency of treatment and number of treatments
- ▶ Typical side effects
 - disorientation after treatment
 - retro- and anterograde amnesia.
- ▶ Cognitive side effects are known to be temporary and, in the majority of cases, be undetectable or minimal 6 months after a course of ECT
- ▶ However long-term and permanent side effects have also been reported

Why monitor cognitive side effects?

- ▶ Patients complaints vs. observed side effects?
 - "depressive talk" vs. methodological problem
- ▶ The use of ECT has grown
 - In Kellokoski hospital in 2001 there were only 25 patients treated with ECT, in 2010 150 patients (over 50% of them are outpatients).
- ▶ Planning the aspects of treatment

- ▶ Monitoring the cognitive side effects of ECT in our hospital and elsewhere is limited
 - Methods
 - Resources
 - Limited resources (access to neuropsychologist) → many units rely on specially trained nursing staff.
 - In Finland the systematic monitoring of cognitive side effect during the course of ECT is rare.
- ▶ Practical need to systematically monitor both beneficial effects and cognitive side effects of ECT in clinical practice is apparent

Cognitive monitoring during the course of ECT

- ▶ American Psychiatric Association
 - at least weekly
 - objective findings (orientation, retro- and anterograde amnesia) and patient report
- ▶ Porter et al. 2008a (review) and 2008b (org.study)
 - recommendations for clinical practice
 - cognitive side effects should be monitored before, during and after the treatment course of ECT

- ▶ Typically used methods
 - bedside questionnaires
 - short cognitive batteries, Mini Mental State Examination (MMSE, 3MSE).
- ▶ Usage of these methods in clinical practice is controversial (ia Porter ym. 2008, Sobin ym. 1995)
- ▶ Other extensive procedures excists (e.g Sackeim et al. Affective and Cognitive Consequences of ECT Study manual: Neuropsychological assessment), **but they take too much time and resources**

Aims of the study

- ▶ Develop a short screening battery which
 - health care professionals can use in clinical practice
 - which would monitor and recognize cognitive side effects (especially memory changes) during and after the treatment course of ECT
- ▶ The study seeks to determine whether the developed screening battery is useful in clinical practice

Methods and Procedures

SUBJECTS

- ▶ 60 patients aged 18 – 60 years are recruited randomly from our Mental Health Clinic (JMT).
- ▶ Primary diagnosis of major unipolar depression
- ▶ Exclusion criteria: psychosis, bipolar disorder, neurological disease or state (dementia, head injury, stroke etc.) and active substance misuse (more than 5 alcohol dose/day).
- ▶ The control group, 40 participants

Methods and Procedures

PROCEDURE

- ▶ Patients and the control group participate in two neuropsychological assessments and in five screening tests.
- ▶ Subjects are given ECT treatment three times a week until remission is attained (RUL 6xthreshold 0,3ms or BT 1,5xthreshold 1,0ms).
- ▶ The first neuropsychological assessment takes place about two weeks before ECT and the second assessment two months after the course of ECT.
- ▶ Cognitive functions will be monitored by a screening test battery which is conducted two weeks before ECT, just before ECT, at least 24 h after 3 treatment but before the fourth, at the end of the treatment and 2 months after the completion of ECT.

Method	pre-1	pre-2	during	after-1	after-2
	2 weeks before	1-2 days before	after 3. treatment	after course	2-3 months after
Neuropsychological assessment	X				X
Screening battery: Cognitive tests and structured interview	X	X	X	X	X
Self-Assessment	X			X	X
Orientation	after each treatment				
Mood	after each treatment				

Neuropsychological assessment

- ▶ Neuropsychological assessment consists of tests which evaluate memory, reasoning ability, executive functions and attention
- ▶ WAIS–III (parts), WMS–III (parts), Trail making, Stroop, verbal fluency, CANTAB (parts)
- ▶ Cognitive reserve (Legendre et al. 2003)
- ▶ Special cognitive difficulties


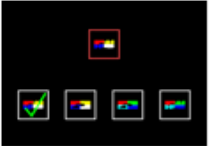
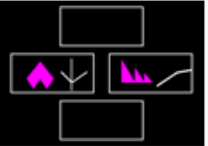




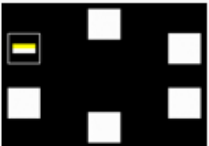
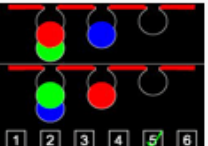
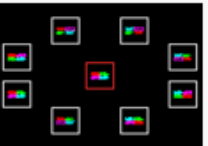

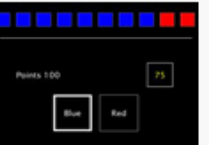
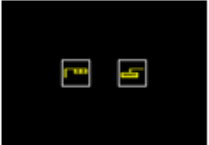
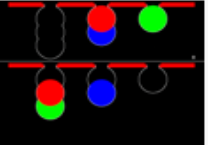
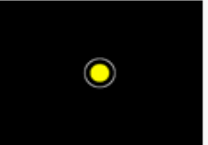
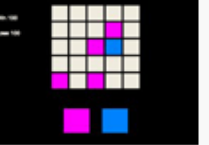
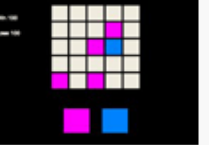
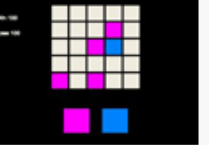

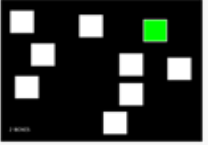
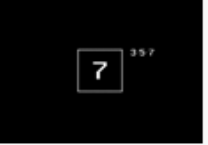



Screening battery

- ▶ max. 1 hour
- ▶ Consists of
 - tests of cognitive function
 - structured interviews
 - self-assessment questionnaires
 - orientation
- ▶ Most of the cognitive tests are presented via computer.
- ▶ Tests are applied to Finnish use
- ▶ Parallel versions

Cognitive tests

- ▶ CANTAB Cambridge Neuropsychological Test Automated Battery (Fray et al. 1996)
 - Falconer et al. (2010) significant impairments in visual and visuospatial memory during and within week after ECT. Spatial recognition memory was still impaired after 1 month at the end of the course of ECT
 - Visual memory, attention, executive functions, working memory
 - Tolerates repeated measures
 - Computerized method

<http://www.camcog.com/science/cantab-tests-all.asp>

Induction	Visual memory	Executive function	Attention	Semantic/Verbal memory	Decision making and response control
					
Motor Screening (MOT)	Delayed Matching to Sample (DMS)	Intra-Extra Dimensional Set Shift (IED)	Choice Reaction Time (CRT)	Graded Naming Test (GNT)	Affective Go/No-go (AGN)
					
Big/Little Circle (BLC)	Paired Associates Learning (PAL)	One Touch Stockings of Cambridge (OTS)	Match to Sample Visual Search (MTS)	Verbal Recognition Memory (VRM)	Cambridge Gambling Task (CGT)
					
Pattern Recognition Memory (PRM)	Stockings of Cambridge (SOC)	Reaction Time (RTI)	Information Sampling Task (IST)	Information Sampling Task (IST)	Information Sampling Task (IST)
					
Spatial Recognition Memory (SRM)	Spatial Span (SSP)	Rapid Visual Information Processing (RVP)	Stop Signal Task (SST)	Stop Signal Task (SST)	Stop Signal Task (SST)

<http://www.camcog.com/science/test-rvp.asp>

<http://www.camcog.com/science/test-ssp.asp>

▶ Processing speed (visual search)

Find all P and S letters

LÖASMVPÅWEÄASOREN
GNVAÄSXAÄSPENVASEP
RINTPSNSDPELDSNSPTN
SAPSNASPSESPTJDNVAS
KDHFNGLSLAKDFNVSPE

MEMORY

- ▶ Autobiographical memory (structured interviews)
 - widely used
 - applied AMI-S / PIMT (Lisanby et al. 2000. Personal and Impersonal Memory Test)
 - personal and impersonal memories
 - recent and remote events
 - last 4 years
 - personal memory vs. heard memory
- ▶ “Person Memory”
 - via computer
 - face and background information
 - immediate and delayed recall (free and cued)

“Person Memory”



- ▶ Name: Anna
- ▶ Age: 26
- ▶ Occupation: Student
- ▶ Living state: Joensuu
- ▶ Birth state: Oulu
- ▶ Family: boyfriend and 2 cats
- ▶ Hobbies: running

Self Assessments and orientation

▶ Self Assessments

- Memory, attention, verbal skills, reasoning ability, practical skills
- Quality of life (Short form of Health Survey, SF-36)

▶ Mood

- BDI-II, MADRS

▶ Orientation

Challenges

- ▶ Sensitivity vs. Specificity
- ▶ Is it useful in clinical practice and well tolerated?
- ▶ Repeated measures → Learning effect, familiarity?
- ▶ Memory problems in depression vs. Memory problems from ECT?
- ▶ How to measure autobiographical memory? What do the tests measure?
- ▶ Training health care professionals

Expectations

- ▶ The study aims to develop a viable screening battery for assessing cognitive functioning during and after ECT, which would greatly benefit the daily clinical practice.

Study Group

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