

Mortality from natural and unnatural causes after ECT over a 25-year period

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Problems

- Is ECT dangerous for the heart?
 - Directly (Increase of blood pressure)
 - Indirectly (Can ECT cause rise in cardiac troponins?)
- Depression is dangerous for the heart
 - Significant comorbidity between IHD and depression
 - Depression doubles the risk for AMI (Nicholson et al. 2006, Janszky et al. 2007)
 - Depression worsens the prognosis for AMI (Sørensen et al. 2006, Dickens et al. 2008)

Patients who receive ECT in Denmark are highly selected

- Severe depression
- Severe suicidality
- Cases with treatment-resistant depression
- Severe somatic illness contra-indicating use of antidepressant medication

A register study of the mortality

Munk-Olsen T, Laursen TM, Videbech P,
Mortensen PB and Rosenberg R:

All-cause mortality among recipients of
electroconvulsive therapy. Register-based
cohort study

British j Psychiatry (2007), 190, 435-439

Study population

- All patients admitted to the hospital from April 1976 to October 2000
- 89,141 admissions
- ECT was administered in 4971 patients (5.58%)
- Mean number of treatments: 10.1
- 95% received unilateral ECT
- 783 ECT recipients died during the study period
- 5781 other psychiatric in-patients died

- ECT-register at Århus University Hospital, Risskov
- National Register of Causes of Death
- Diagnoses: ICD-8 until 1993, ICD-10 after 1994

Results: ECT recipients

- 95% received unilateral ECT
- 783 ECT patients died during the study period
 - 593 (76%): natural causes
 - 190 (24%): from unnatural causes
- Diagnoses of the deceased ECT recipients:
 - 447 (57%): Unipolar affective disorders
 - 178 (23%): Bipolar affective disorders
 - 55 (7%): Schizoaffective disorders
 - 46 (6%): Schizophrenia
 - 9 (1%): Other non-affective psychosis
 - 48 (6%): 'Other disorders'.
- **RR of mortality** compared with the other psychiatric in-patients was 0.86 (95% CI 0.79–0.94).
 - RR (Natural causes)=0.82 (95% CI 0.74-0.90)
 - RR (Unnatural causes)=1.10 (95% CI 0.92-1.30)

Cause-specific mortality for ECT patients (Natural causes)

Cause of death	<i>n</i>	Relative risk (95% CI)
Natural causes		
All natural causes	593	0.82 (0.74–0.90)
Cardiovascular diseases	163	0.85 (0.70–1.03)
Malignant neoplasms	124	1.01 (0.81–1.25)
Diseases of old age including stroke	90	0.98 (0.76–1.26)
Respiratory diseases	77	0.73 (0.55–0.95)
Other causes	139	0.67 (0.56–0.82)

ECT, electroconvulsive therapy.

1. Based on 20 923 person-years.

2. Adjusted for gender, age (10-year intervals), calendar period (5-year intervals), diagnosis, previous admissions with other psychiatric in-patients as reference group.

Cause-specific mortality for ECT patients (Unnatural causes)

Cause of death	<i>n</i>	Relative risk (95% CI)
Unnatural causes		
All unnatural causes	190	1.10 (0.92–1.30)
Suicide	149	1.20 (0.99–1.47)
Accidents	41	0.80 (0.56–1.14)

Patients treated with ECT in the past week (n=6)
RR=4.82, (95% CI 2.12–10.95)

Relative risk for suicide

	<i>n</i>	Person-years	Relative risk (95% CI) ¹
Days since discharge			
Currently admitted	126	9513	2.93 (2.38–3.59)
Discharged within past 7 days	39	884	9.49 (6.80–13.24)
Discharged within past 8–30 days	66	3079	4.77 (3.67–6.19)
Discharged more than 30 days ago	681	195 465	Reference
ECT treatment²			
Within past 7 days	6	63	4.82 (2.12–10.95)
Within past 1–4 weeks	7	207	1.48 (0.69–3.16)
More than 4 weeks ago	136	20 316	1.23 (1.01–1.52)
No ECT treatment	763	188 356	Reference

ECT, electroconvulsive therapy.

1. Adjusted for gender, age (10-year intervals), calendar period (5-year intervals), diagnosis and previous admissions.
2. At Psychiatric Hospital, University Hospital of Aarhus.

Why a decreased mortality from natural causes?

- Selection bias: somatically ill patients are not treated with ECT? - Probably not.
- Depression complicates treatment of somatic illness? Rapid stress reduction?
- More thorough somatic examination before ECT?
- Better somatic care due to ECT?

Other studies

- Other studies have found reduced mortality from natural causes (Avery & Winokur, 1976; Prudic & Sackeim, 1999; Geddes, 2003)
- Shiwach et al. 2001: <2 death pr. 100.000 within 14 days after ECT
- Nuttall et al. 2004: After 17.000 treatments in 2279 patients:
 - 0 deaths immediately
 - 18 deaths after 30 days of final treatment (suicide, cancer, pneumonia, stroke, hepatic cirrhosis)
- Watts et al. 2011: No death related to 73.440 treatments (Veterans Hospitals, between 1998-2009)

Conclusion

- Lower mortality from natural causes in nearly 5000 patients
- High risk of suicide within 1 week (n=6)
- Marginally lower risk for death due to cardiac reasons
- Lower risk for death due to lung disorders