Optimizing the technique of ECT

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Recent trends

- More treatments
- Shorter seizures
- Lower rates of remission

Crucial issue

To combine

Maximal antidepressive effect

with

Minimal memory impairment

Maximal AD effect

- Induction of grand mal seizures
- Bitemporal stimulation
- Alternating current

Minimal memory impairment

- Barely superthreshold stimulation
- Right unilateral stimulation (d´Elia)
- Brief or ultrabrief pulses

Unilateral stimulation Konvulsator

- AD effect equal to bitemporal ECT
- Memory impairment less

Unilateral stimulation
Modern devices

- AD effect often inferior
- Memory impairment less
- Many seizures are not grand mal
- Experience with Konvulsator cannot be applied to modern devices

Brief or ultrabrief pulses

- Less memory impairment
- This advantage is outweighed by lower AD effect
- Submaximal seizures with inferior AD effect are often induced

Unfortunate interactions

- Unilateral stimulation
- Barely threshold stimulation
- Brief or ultrabrief pulses
- Benzodiazepines
- Anticonvulsive drugs
- Deep narcosis

Minimization of memory impairment

- Desirable – but
- Jeopardizes AD effect

Psychotic depression

- Psychotic depression (delusions and/or hallucinations) does not respond better to antidepressive drugs than placebo.
- Remission rate is around 40 percent.
- Addition of antipsychotic drugs augments the effect only insignificantly and causes embarassing side effects.

Psychotic depression

- Remission rate with ECT is 92--95 percent
- Of those not responding to drugs 83 percent remitted after ECT
- ECT is the treatment of choice

Psychotic depression

- Maximal and rapid AD effect is prioritized over minimal memory impairment
- Bitemporal stimulation
- Pulse duration no less than1,0 ms

Non-psychotic depression not responding to drugs and high risk of suicide

- Treat as psychotic depression

Non-psychotic depression not respondig to drugs and low risk of suicide

- Minimal memory impairment may be prioritized over maximal and fast AD effect
- RUL and ultrabrief pulses reduce memory impairment
- But if more treatments are required

  there may be no cognitive advantage to bitemporal ECT and wider pulses

Significance of electrical stimulation

- Excessive stimulation
  - More memory impairment
  - Not better AD effect
- Barely threshold stimulation
  - Less memory impairment
  - Less AD effect
- Optimal stimulation
  - Sufficient to induce grand mal seizures
  - to secure maximal AD effect

Stimulation parameters

- Amplitude,
- Frequency and
- Duration of pulses
- Total time of stimulation

Stimulation parameters

With pulse frequency 30 – 60 Hz
devices may not have sufficient power
to induce grand mal seizures
if pulse duration is below 1,0 ms.