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 embarrassing 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 than 1.0 ms
Non-psychotic depression not responding to drugs and high risk of suicide

• Treat as psychotic depression
Non-psychotic depression not responding 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.