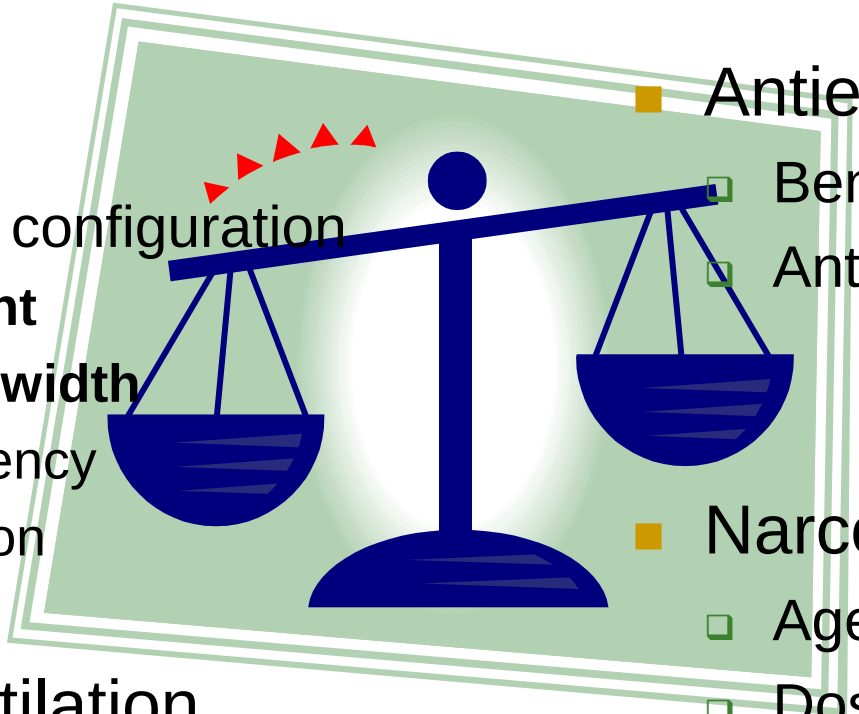
Anaesthesiology in ECT – experiences and reflections

Ralf Ansjön NACT Conference
Helsinki 2011

Convulsive activity is influenced by…

+

- Stimulus
  - Charge
  - Stimulus configuration
    - **Current**
    - **Pulse width**
    - Frequency
    - Duration
- Hyperventilation
  - Lower pCO_2
- (Drugs as caffeine)



−

- Antiepileptic medication
  - Bensodiazepines
  - Antiepileptics
- Narcosis
  - Agent
  - Dose
  - Time from administration.

Effects on cerebral metabolism

- Oxygen consumption increases by 200 %.
- Cerebral blood perfusion increases by 300 %.
- Increased intracranial pressure.

- Tachycardia and elevated blood pressure to maintain perfusion in CNS - need of O_2 and glucose.

Cardiovascular effects

- Stimulus - parasympaticus:
  - bradycardia
  - hypotension
- Seizure – sympaticus:
  - tachycardia
  - hypertension
  - arrhytmia
  - Increased myocardial oxygen consumtion
- After the seizure – parasymaticus
  - Bradycardia (30-40 bpm).

Other effects

- Intraocular pressure increases.
- Intragastric pressure increases.

Counterindications to ECT-narcosis

Often related to cardiovascular disease

- ”Absolute”
  - Myocardial infarction < 6 weeks
  - Stroke < 6 weeks
  - Phaeochromocytoma

Relative counterindications – cost / benefit

- Intracranial expansivity (increased pressure)
- Cardial incompensation
- Angina
- Chronic obstructive pulmonary disease
- Major fractures
- Severe osteopenia
- Glaucoma
- Rethinal ablation
- Severe obesity
- Late pregnancy
- ASA 4 och 5

Aspects on blood pressure increase

- Blood pressure medication often adequate.
- Walk the stairs!
- ”Elevated pre-treatment blood pressure” – often sympaticus (nervousness!).
- Give 1-2 ml of anaesthetic and wait 1-2 minutes. Often normalized.

Three reasons **not** to regulate hemodynamics to vigorously

- Beta blockers:
  - Parasympatic activation – risk of sinus arrest.
- Pre-treatment stressed patients
  - Relatively moderate increase during treatment.
- Cerebral perfusion ↑300 %, metabolism ↑ 200%

Needed for O2 and glucose.

  - Shorter seizures?
  - Increased side-effects?

Somatic medication

- Cardio-vascular treatment as usual.
  - Diuretics after treatment.
- Asthma medication as usual.
  - Avoid Teofyllin (status epilepticus)
- Glaucoma treatment as usual
  - Avoid slow release choline esterase inhibitors.
- Diabetes:
  - Peroral drugs after treatment.
  - Half dose of slow insulin before
  - No short acting insulin

Psychiatric medication

- Bensodiazepines
  - Avoid – but individual management:
    - Flumazenil / increased charge / bilateral ECT / lower dose anaesthetic
- Lithium
  - Risk of increased cognitive side-effects
  - Prolonged apnea has been described
  - Often no problem (<0.6 mmol/l)
- Serotonergic antidepressants?
  - Serotonergic syndrome??
  - Cognitive side-effects?
- MAOI
  - Serotonergic syndrome??
  - Epinephrine in case if blood pressure ↓ (not Efedrin)
  - Alfa blockers (Trandate) if blood pressure ↑

Antiepileptics – subtherapeutical seizures

Substantial increase of seizure threshold:

- Barbiturates — Fenemal
- Carbamazepine — Tegretol, Hermolepsin
- Phenytoin — Epanutin
- Valproate — Ergenyl, Orfiril, Absenor

Less pronounced increase:

- Lamotrigin — Lamictal
- Vigabatrine — Sabrilex
- Gabapentine — Neurontin

Handling anti-epileptics

Treatment of epilepsy

- As usual
- Morning dose after ECT
- If needed – consult a neurologist

Psychiatric indication

- Introduce after index ECT
- Avoid the day before ECT
- Dose reduction
- ECT procedure
  - Increased charge
  - Bilateral electrode placement

Anticholinergic drugs reduce the risk of brady-arrhytmias

- Subconvulsive stimulus:
  - Activation of parasympaticus – bradycardia.
- Especially if treated with beta-blockers.
- Postictal parasympaticus acitivation - bradycardia.

- Decreased salivation

Choice of anticholinergic drugs

Atropin

- Passes blood-brain barrier – advantage?
- Confusion.
- Tachycardia.
- Dry mouth
- Brest feeding?
- Pregnancy OK.

Robinul (glucopyrrhinol)

- Does not pass bbb.
- Not in pregnancy.
- Brest feeding OK.
- Not in severe renal insuffiency.

Anaestetic agents:

Pentothal

- 2-3 mg/kg ?
- Easy dose titration
- Slower awakeing

Drawbacks:

- Nausea.
- Cardio-vascular effects

Propofol

- 1-1½ mg/kg ?
- Narrow therapeutic window.
- Cardio-vascular stability.
- Less nausea.

Drawbacks:

- Shorter seizure duration.

Brietal

- 1 mg/kg
- Easy dose titration
- Cardio-vascular stability.

Drawbacks

- Nausea

Ketamin

- 1-2 mg/kg
- Sympatic activation.
- Alternative at high seizure threshold.

Drawbacks:

- Hallucinations.
- Second line

Muscle relaxants

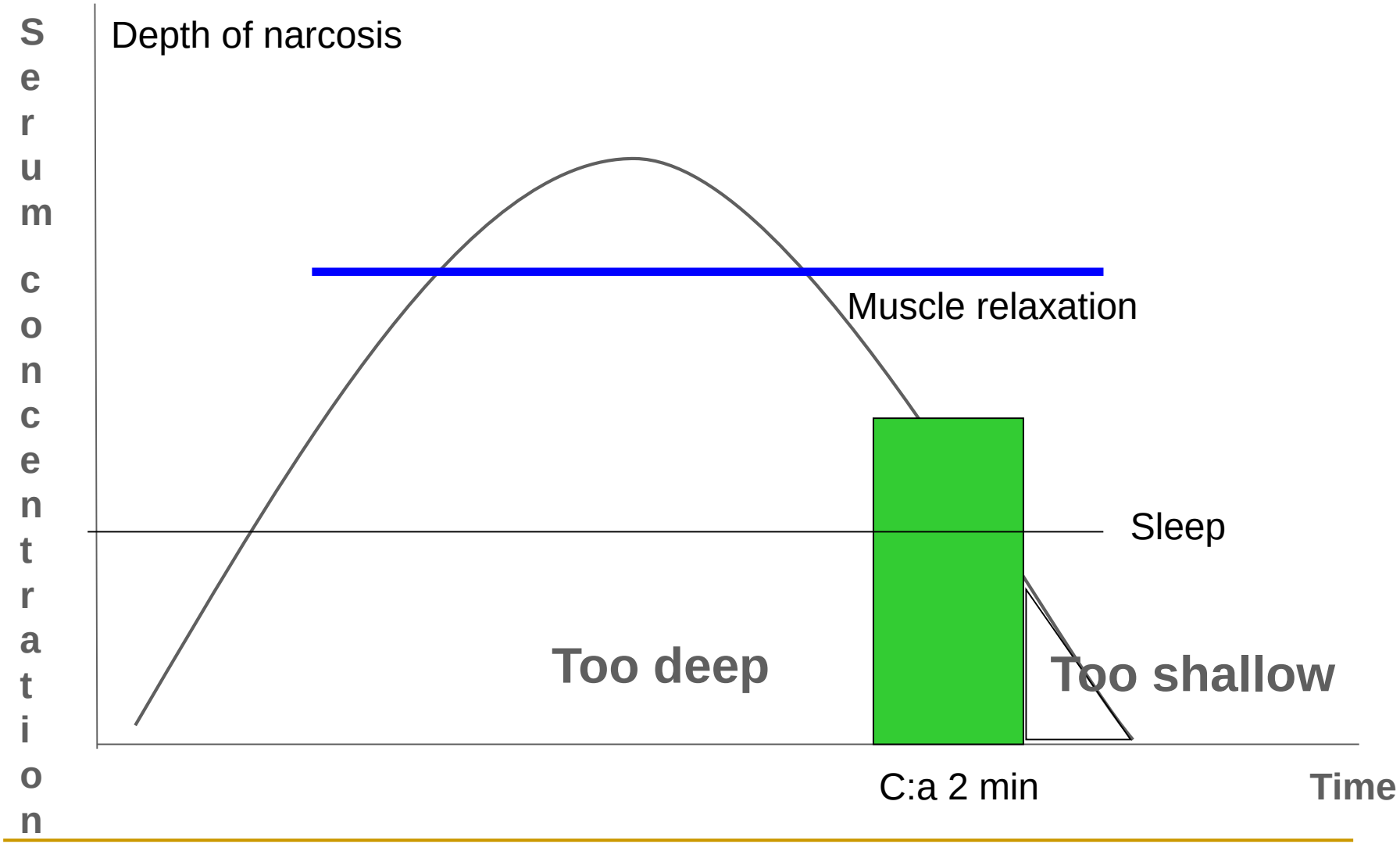
Succinyl choline

- Depolarizing

Precaution:

- Muscle diseases – long seizures
- Liver diseases – lack of pseudokolinesterasis
- Osteoperosis
- Malignant hypertermia

Narcosis and stimulation



Headache and nausea

- **Headache** (1/10): 1 g paracetamol before the next treatment. An effect of the seizure.
- **Nausea** (1/100): Effect of anaestesia.
  - Primperan – antidopaminergic effect. Påskyndar också ventrikeltömning och höjer tonus i nedre oesophagussfinkter. Lämplig dos 10 mg intravenöst alt 10 mg per os före behandling.
  - Postafen – antihistamin ges före behandling. Lämplig dos 25 mg.
  - Byt Pentothal mot Propofol (ev. Ketamin)
  - Ondansetron – antiserotonerg (5HT3-receptor)

Reflux / andningshinder

- OBS! Kraftig hosta efter behandling – **reflux**?
- Ge någon form av syrahämmande medel:
  Zantac (H2-antagonist)
  Pantoloc (protonpumpshämmare)
- Eventuellt ge 30 ml Natriumcitratlösning före narkos.
- **Laryngospasm**:
  - Ge Pento 3-5 ml alternativt Propofol.
  - Celo 10-25 mg
  - Övertrycks O_2

Ångest / postiktal konfusion

- Lindrig konfusion kvitto på generaliserad EP
- Vid uttalad konfusion / ångest / agitation
  - Pentothal / ***Propofol iv***
  - Alt Diazepam (Stesolid) iv
- Inför nästa behandling
  - Propofol 2-3 ml (20-30 mg) efter anfallets slut
  - (Alt Stesolid 2.5 – 10 mg)
- Omprövas under behandlingsserien

Narkos vid ECT – en sövande balansakt


www.bergshammar.se mail: hakan@bergshammar.se
Användarnamn och lösenord: 2324