Recommendations

General initial management

- airway and ventilation
- EKG and blood pressure monitoring
- arterial blood gas monitoring
- metabolic complication surveillance
- other measure; glucose, thiamine, etc.

Initial pharmacological treatment for GCSE

Pre-hospital treatment

GCSE

- 2 mg lorazepam is as effective as 5 mg diazepam (Level A)
- Out-of-hospital, i.v. administration of benzodiazepine in GCSE is as safe as placebo treatment (Level A)
- available studies have not convincingly demonstrated a good-enough efficacy of valproic acid to be included in the group of first-line substances for the treatment of generalized convulsive or other clinical forms of SE.

Initial pharmacological treatment for GCSE

- Intravenous administration of 0.1 mg/kg lorazepam (Level A)
- 10 mg I.V. diazepam followed by 18 mg/kg PHT or equivalent fosphenytoin (Level A)
- PHT should be load rapidly with an infusion rate at 50 mg/min, this regimen is safe as anticonvulsant treatment using other drugs (Level A)

Initial treatment of CPSE

There are no studies available focusing exclusively on the initial AEDs treatment of CPSE

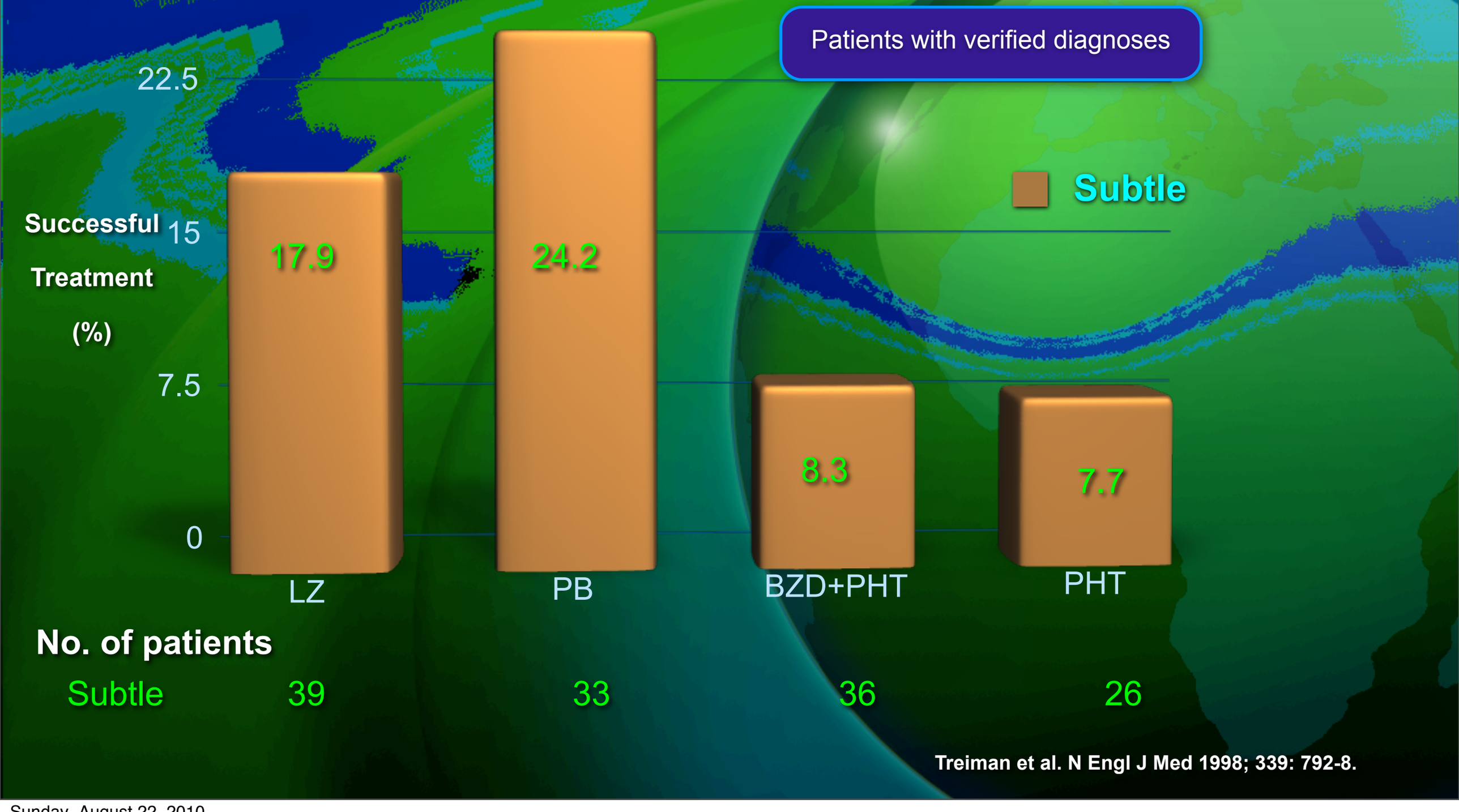
Initial treatment of subtle SE

The New England Journal of Medicine

A COMPARISON OF FOUR TREATMENTS FOR GENERALIZED CONVULSIVE STATUS EPILEPTICUS

DAVID M. TREIMAN, M.D., PATTI D. MEYERS, M.P.A., NANCY Y. WALTON, PH.D., JOSEPH F. COLLINS, SC.D., CINDY COLLING, R.PH., M.S., A. JAMES ROWAN, M.D., ADRIAN HANDFORTH, M.D., EDWARD FAUGHT, M.D., VINCENT P. CALABRESE, M.D., BASIM M. UTHMAN, M.D., R. EUGENE RAMSAY, M.D., AND MEENAL B. MAMDANI, M.D., FOR THE VETERANS AFFAIRS STATUS EPILEPTICUS COOPERATIVE STUDY GROUP*

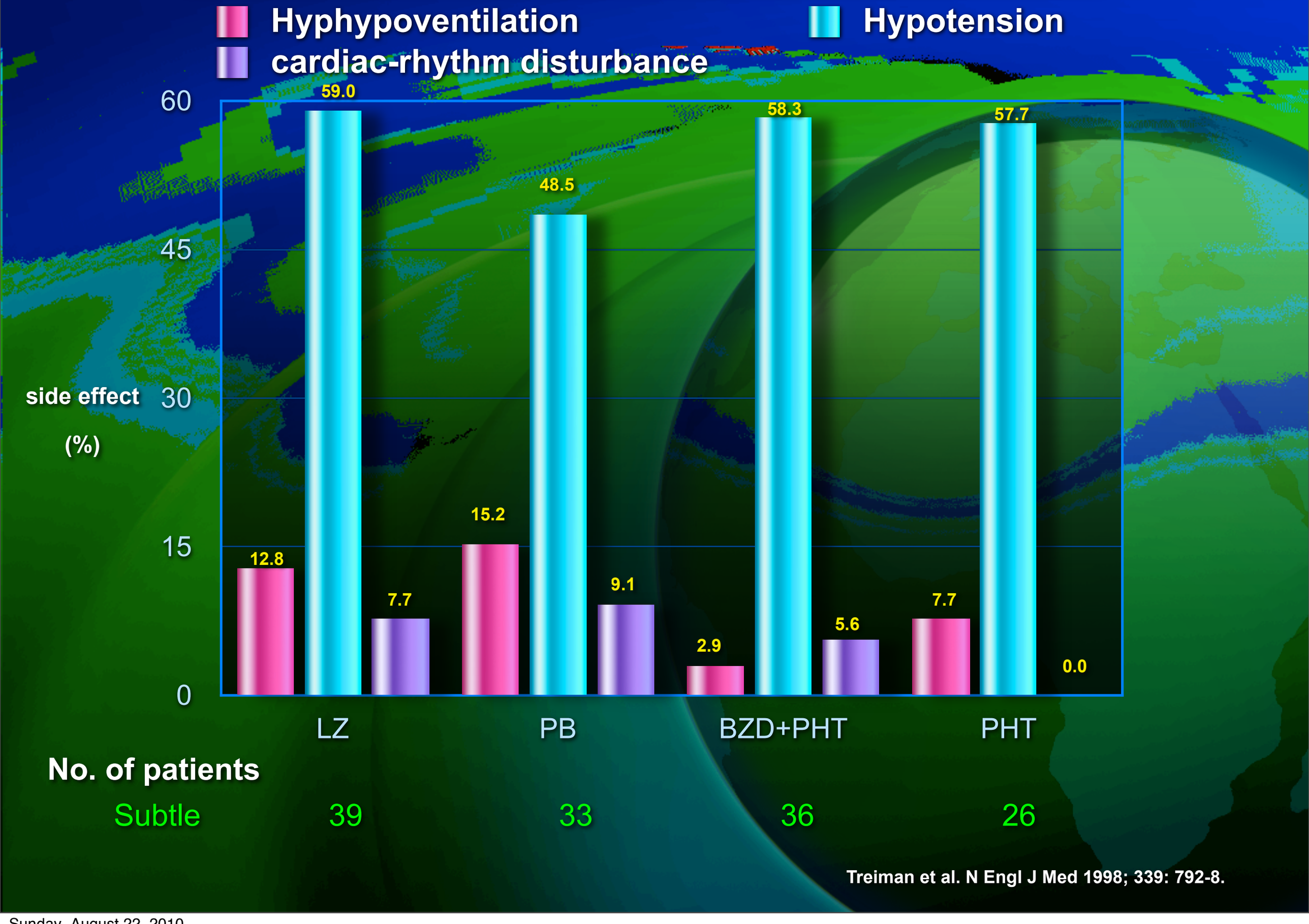
Patients with verified diagnoses



Treiman et al. N Engl J Med 1998; 339: 792-8.

Side effects of initial treatment of subtle SE

Side effect of initial treatment of subtle SE



Treiman et al. N Engl J Med 1998; 339: 792-8.

Recommendations

Initial pharmacological treatment for Subtle SE and NCSE

"CPSE should be treated initially in the same way as GCSE (GPP)"

"Subtle SE: the initial anticonvulsant treatment should be identical to that of overt GCSE (GPP)"

Refractory GCSE and NCSE

- Type of SE
- Age
- Comorbidity
- Prognosis issue

Refractory GCSE and NCSE

- Class IV
- 83 episodes of SE (RSE= 26; Non-RSE=57) in 74 patients (mean age 63 years)
- RSE: seizure lasting longer than 60 minutes despite treatment with BDZ an adequate loading dose of a standard i.v. anticonvulsant drugs.
- 24 episode of RSE were treat with a third-line drug (non-anaesthetic)
- 12 of these episodes, seizure were controlled
- 11 of these episode need further more aggressive treatment

Mayer et al. Arch Neurol 2002; 59:205-10.

Refractory GCSE and NCSE

- Class IV
- 35 episodes of SE in 34 patients
- 18/35 SE termination with nonanesthetizing anticonvulsants
- RSE: clinical and/or electrophysiologic epileptic activity not responding to first-line anticonvulsants regardless of the delay from seizure onset.

Holtkamp et al. Arch Neurol 2005; 62: 1428-31.

Further non-anasthetising anticonvulsant

- Agarwal et al. Seizure 2007; 16: 527-32 (Class III)

  Randomized open study 50 patients; 30% of patients < 18 years

  VPA 20 mg/kg controlled seizure 88%

  PHT 20 mg/kg controlled seizure 84%

- Limdi et al. Neurology 2005; 64: 353-5. (Class IV)

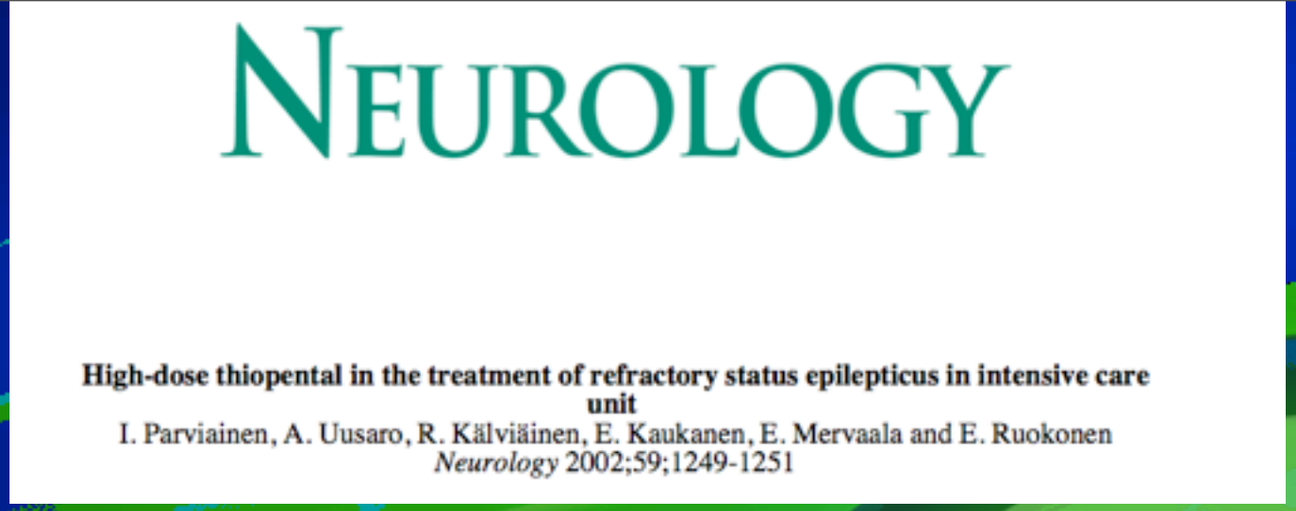
  retrospective study 63 patients with untreated or RSE

  overall efficacy rates of 63%

  more successful in RSE

Levetiracetam

Study	Method	Class	Dose (mg) I.V.	Result termination
Knake et al. 2008	retrospective	IV	250 and 1,500	16 of 18
Uges et al. 2008	prospective	IV	2,500	10 of 11



- RSE 10 patients Class IV
- initial bolus of 5 mg/kg and additional boluses of 1-2 mg/kg to achieve burst suppression
- infusion rate rate was started at 5 mg/kg/h
- increase to median of 7 mg/kg/h to maintain burst suppression
- No patient, epileptic seizure activity re-occurred following tapering of thiopental
- All hypotension; only 4 require catecholamine
- 9 patients were treat with antibiotic

Ulvi et al. Neurol Sci 2002; 23: 177-82

ORIGINAL

H. Ulvi • T. Yoldas • B. Müngen • R. Yigiter

Continuous infusion of midazolam in the treatment of refractory generalized convulsive status epilepticus

- RSE 19 patients Class IV
- initial bolus of 0.2 mg/kg
- infusion rate rate was started at 1 µg/kg/h
- increase to median of 8 µg/kg/h to control clinical seizure
- seizure activity was terminated in all but one patient
- no patient developed hemodynamically relevant arterial hypotension or other important medical side effects

Ulvi et al. Neurol Sci 2002; 23: 177-82

Intensive Care Med (2006) 32:1075–1079
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BRIEF REPORT

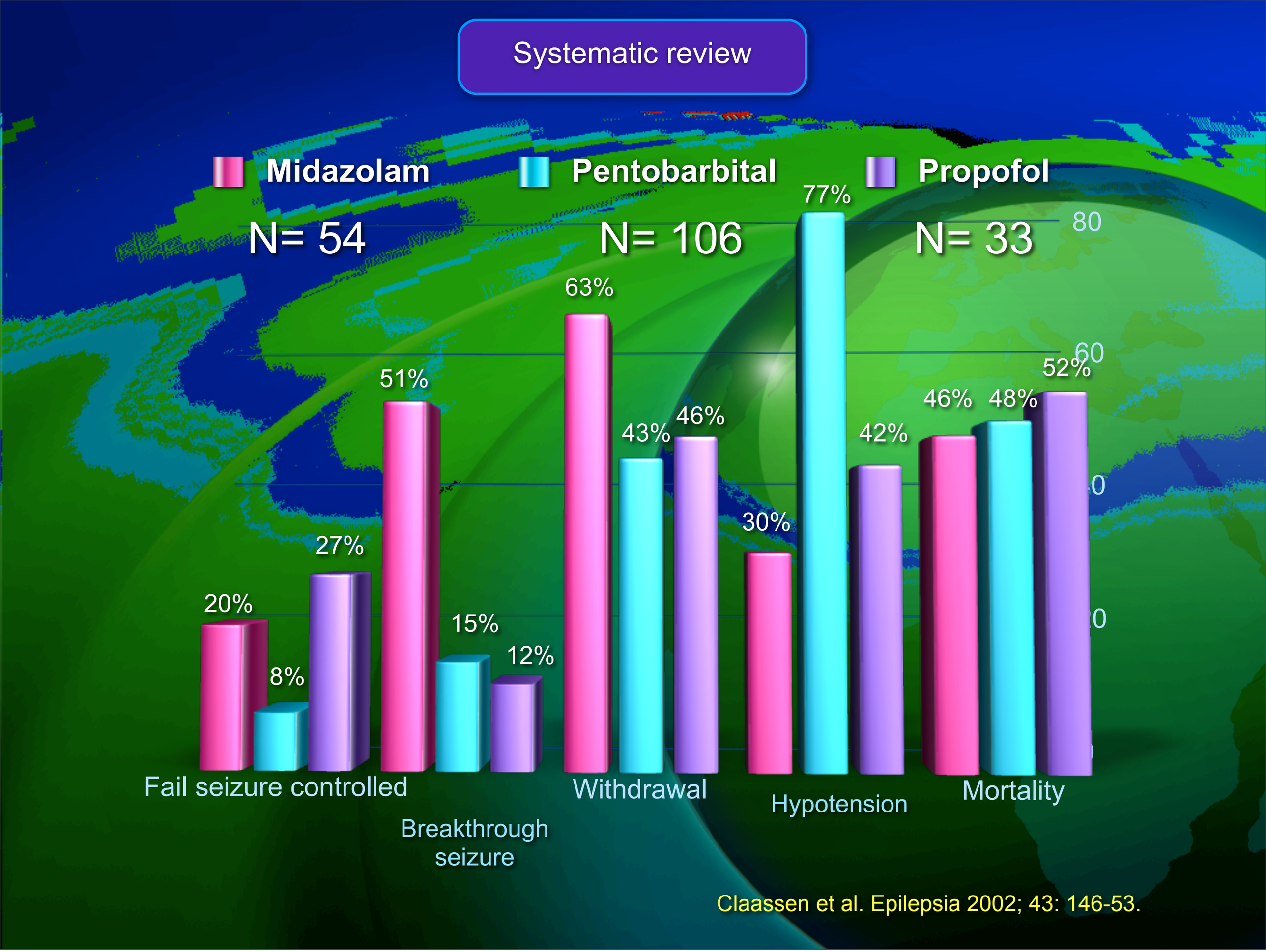
Ilkka Parviainen
Ari Uusaro
Reetta Kälviäinen
Esa Mervaala
Esko Ruokonen

Propofol in the treatment of refractory status epilepticus

- RSE 10 patients Class IV
- initial bolus of 2-3 mg/kg and additional boluses of 1-2 mg/kg to achieve burst suppression
- infusion rate rate was started at 4 mg/kg/h
- increase to median of 9.5 mg/kg/h to maintain burst suppression
- epileptic seizure re-occurred
- All hypotension; 7 patients received norepinephrin

Parviainen et al. Intensive Care Med 2006; 32: 1075-9.

Systematic review



Claassen et al. Epilepsia 2002; 43: 146-53.

Anaesthetising anticonvulsant

- Barbiturate, propofol and midazolam are commonly used in refractory SE but....

  extremely difficult to achieve burst suppression with midazolam (Class IV)

- No RCT comparing these treatment options