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Botulinum toxin type A *versus* phenol. A clinical and neurophysiological study in the treatment of ankle clonus

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AIM. To reduce ankle clonus in patients with spastic paresis either phenol nerve block of the tibialis posterior nerve or botulinum toxin type A (BTA) injection in triceps surae muscles can be used. This study aims to compare the efficacy over time of phenol nerve block and BTA injection in the inhibition of ankle clonus. **METHODS.** Twenty-two patients with spastic paresis presenting with ankle clonus were randomly treated with phenol nerve block of the tibialis posterior nerve or BTA injection in triceps surae muscles. Ankle passive dorsiflexion, clonus, M and H responses and H/M ratio were measured in all patients prior to treatment and 15 days afterwards, as well as one, three and six months later in 12 patients. Patient satisfaction was also recorded. **RESULTS.** Both patient groups showed significant clonus reduction over time with the effect of phenol being greater than that of BTA. In one month, the degree of passive dorsiflexion significantly increased in both groups without any significant difference between them. H/M ratio reduced after phenol treatment and remained almost constant during the following six months, whereas it remained at baseline level after BTA treatment. **CONCLUSION.** While both treatments led to reduction in ankle clonus, phenol showed greater clinical efficacy. The difference in the neurophysiological results suggests that the two drugs have different action mechanisms with a more prevalent reduction of alpha motoneuron excitability in phenol-treated patients.

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- 1. Ankle clonus in patients with spastic paresis can be reduced by local injection of botulinum toxin or phenol. Which are the characteristics shared by the two drugs?**
- A. Both reduce the ankle clonus through the same pharmacological mechanisms
 - B. Both act by blocking the action potentials of the motor axons
 - C. Both affect predominantly interfusar muscle fibres
 - D. Both reduce the amplitude of the M and H waves
 - E. Both do not affect the H/M ratio

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2. Local botulinum toxin injections are useful to reduce ankle clonus in patients with spastic paresis. By which mechanism is this effect brought about?

- A. By blocking the action potentials of the motor axons
- B. By paralyzing specifically the intrafusal muscle fibres
- C. By a presynaptic block of neurotransmitter release at the motor endplates
- D. By inactivating a protein involved in neurotransmitter release within the endings of the Ia afferent terminals
- E. By reducing the H/M ratio in the antagonist muscle

3. Ankle clonus can be treated by phenol block performed on

- A. The sural nerve
- B. The intermediate dorsal cutaneous nerve
- C. The medial plantar nerve
- D. The tibialis posterior nerve
- E. The external popliteal nerve

Lower respiratory events in seated tracheotomized tetraplegic patients

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AIM. Retrospective study on the changing position impact on respiratory events in 14 rehabilitation tracheotomized tetraplegic patients, during 25 months. METHODS. Three positions were compared: permanently supine (16 periods), seated on ≤ 5 days/week (20 periods), or seated on ≥ 6 days/week (10 periods). The end-point was the incidence of the following respiratory events: pneumonia, atelectasis and plugging of tracheal/bronchial secretions. Patients were considered as their own control but data were pooled for analysis. RESULTS. Pneumonia and plugging incidences were significantly higher in the permanently supine position than in the seated ≤ 5 days position ($P \leq 0.001$). Incidence was not significant higher in the seated ≤ 5 days than in the seated ≥ 6 days position. Atelectasis occurred only in the supine position. CONCLUSION. Plugging prevalence was significantly higher in the permanently supine position (53.3%) than in the seated ≤ 5 days position (21.6%, $P < 10^{-5}$), and in the seated ≤ 5 days position (21.6%) than in the seated ≥ 6 days position (14.6%, $P = 0.001$).

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4. In patients with spinal cord injury, respiratory infection is:

- A. A rare, not life-threatening complication
- B. One of the most prevalent hospital-acquired infections
- C. Independent from the primary disease and injury level
- D. Increased when patients are in seated position
- E. A minor complication

5. In this study the procedure for patient positioning included:

- A. a preventive treatment against hypertension
- B. a preliminary venous Doppler ultrasound examination of the lower limbs
- C. an instrumental monitoring of skin pressures in at-risk areas
- D. a special hospital bed able to achieve a full-chair position
- E. a protocol for progressive head-of-bed elevation

6. In this study you find that episodes of atelectasia occurred:

- A. independently from the position
- B. in patients seated ≤ 5 days a week (one hour)
- C. in patients seated ≥ 6 days a week (one hour)
- D. in patients with permanent supine position
- E. in no patient

See answers on page 310.