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Title (type in CAPITAL LETTERS): EXPERIMENTAL STUDY FOR THE OBJECTIVATION OF BLADDER SENSIBILITY BY FREQUENCY ANALYSIS OF EEG ACTIVITY AND REGISTRATION OF EVOKED POTENTIALS

Neurological diseases are often combined with disturbed or lost bladder sensibility. Aim of study was to develop a method that enables a statement whether intact afferences from the bladder to the brain exist or not. Another goal of this study was to evaluate different ways of selctive and non-selective stimulation of bladder afferences.

In 6 anesthetized foxhound dogs, bladder afferences were stimulated by bladder distension and by electrical stimulation of the sacral posterior roots S2/S3. EEG activity was recorded before, during and after stimulation. In a second trial in 6 anesthetized foxhound dogs and 6 rabbits, cerebral evoked potentials were recorded by stimulation of the bladder afferences by bladder distension, by electrical stimulation of the bladder wall and by selective (Aδ- and C-fibres) and non-selective (total nerve) stimulation of the sacral posterior roots.

The frequency analysis showed that maximal cerebral activity before stimlation ranged between 1 ad 5 Hz, whereas maximal activity during stimulation ranged above 8 Hz. After stimulation, the activity returned to the range between 1 and 5 Hz. The assessment of cortical evoked potentials showed that stimulation of the bladder wall by electrical stimulation and by bladder distension resulted in maximum cerebral responses with a latency of more than 2.500 ms. During stimulation of the sacral roots by non-selective stimulation (total nerve), responses with a latency up to 800 ms and smaller responses from 3.500 up to 8.000 ms were observed. During selective stimulation of Aδ- and C-fibres, the responses up to 800 ms were clearly reduced.

We conclude that the stimulation of bladder afferences results in obvious and reversible changes in EEG activity representing a higher vigilance. Selective stimulation of bladder afferences (bladder wall or Aδ- and C-fibres) seems to be important for the assessment of cerebral evoked potentials. Furthermore, the registration of late potentials (up to 8.000 ms after beginning of stimulation) seems to be necessary in order to register all cerebral responses on stimulation. We believe that these methods enable objective assessment of bladder senibility in this experimental setup. Further studies must be carried out before introduction into clinical practice for the benefit of patients with disturbed or lost bladder senisibility.

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