

Instability of spontaneous breathing patterns in patients with persistent vegetative state

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摘要

Abstract

We investigated the breathing patterns of 27 patients in a persistent vegetative state (PVS) and 15 normal control volunteers. During the baseline period breathing air, 15 patients (the PVS-IB) exhibited irregular breathing (IB), whereas the other 12 (the PVS-OB) displayed oscillatory breathing (OB). Both groups maintained an average value for tidal volume ($V(T)$), total breath duration ($T(TOT)$), minute ventilation ($V(E)$), oxygen saturation (SpO_2) similar to the control, but the PVS-OB displayed significantly lower end-tidal CO_2 tension ($P(ET)CO_2$) than the control. The $V(T)$, $T(TOT)$, $V(E)$ and $P(ET)CO_2$ of the PVS-OB showed cyclic changes. The coefficients of variation of $V(T)$, $T(TOT)$ and $V(I)$ were: PVS-OB>PVS-IB>control. Inhalation of 100% O_2 significantly reduced the respiratory variability and prevented OB of the PVS-OB. We concluded that PVS patients display respiratory instability and that brain damage, hypocapnia, and/or increased loop gain of arterial chemoreceptors may contribute to the pathogenesis of OB, whereas brain damage presumably may be the cause of IB.