

Panická porucha a sliny (pilotná štúdia)

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Panic Disorder And Saliva (Pilot Study)

Súhrn

Vplyv hyperventilácie na zloženie slín sme vyšetrili u 10 chorých s panickou poruchou v interparoxysmálnom období. Obdobne ako u zdravej skupiny (18 dobrovoľníkov) sa našli niektoré zmeny v ionograme a $p\text{CO}_2$. Pri panickej poruche sa však odkryl signifikantný pokles $p\text{CO}_2$ a sodíka ($p < 0.05$) pred a po hyperventilácii. Tieto výsledky pravdepodobne vyjadrujú zvýšenú excitabilitu mozgového kmeňa v súlade s neurobiologickou teóriou panickej poruchy (lit. 4). (Psychiatria, 9, 2002, č. 2).

Kľúčové slová: panická porucha, sliny, hyperventilácia, $p\text{CO}_2$, fosfor, sodík

Summary

Saliva, as a rare medium was for the first time involved in investigation of influence of hyperventilation on its composition in ten patients with panic disorder during interparoxysmal period. Similarly as in eighteen healthy volunteers definite changes (values of $p\text{CO}_2$ and some ions) had been found. Contrary to this referential group a significant decrease of $p\text{CO}_2$ and sodium ($p < 0.05$) was revealed in panic disorder but in both situation – before and after hyperventilation. These results reflect a probable expression of primary increased excitability of brain stem centers in accordance with neurobiological theory of panic disorder (Ref. 4) (Psychiatria, 9, 2002, n. 2).

Key words: panic disorder, saliva, hyperventilation, $p\text{CO}_2$, phosphorus, sodium

Introduction

In our original previous study, the saliva was examined in 18 healthy volunteers before and after hyperventilation (Kukumberg et al.: 1993). A significant decrease of phosphorus (occasionally described in the blood also), calcium, chloride, and $p\text{CO}_2$ ($p < 0.005$) was found after hyperventilation. Since hyperventilation seems to be a very frequent sign of panic disorder we try to attest the saliva as a rare medium in 10 patients (7 women and 3 men, mean age 36 years) with panic disorder according to DSM III criteria (American Psychiatric Association, 1987).

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Subjects and methods

Uncontaminated saliva was obtained from ductus glandulae parotis using simple canyla of artefactual material in all patients during interparoxysmal period between 9.00–10.00 a.m. Acid citric drops were applied at radix of the tongue to stimulate production of saliva. Immediately after 4 min. hyperventilation (by mouth) a sample of saliva (cca 3.0 ml) was investigated. The following parameters were analysed: Calcium by o-krezolftalex (the analyser Hitachi 700), phosphorus by molybden blue (Hitachi 700), sodium and potassium by flame photometer IL 743, chloride by coulometric way (the apparatus Eppendorf 6610), lactate by enzyme working up with UV test, and $p\text{CO}_2$ by the acidobasic analyser AVL 947. In one case a feeling of starting panic attack during hyperventilation was registered.

The results of 18 healthy volunteers from original study were used as referential (Kukumberg et al., 1993). Student's t-test was applied in assessment of achieved values.

Results

1. In saliva, a significant decrease of calcium, phosphorus, and pCO₂ was found after hyperventilation in the group of patients with panic disorder (p<0.05).
2. If all investigated compounds of saliva were compared with referential group of healthy persons significant changes of pCO₂ and sodium (p<0.05) appear to be prominent and relevant. As compared to healthy persons a significantly lower level of pCO₂ and sodium (p<0.05) was found not only after hyperventilation but already before one.

Discussion

Hyperventilation represents a classical provocative method to enhance or recognize pathological manifestation of organic and/or functional disorders of central and peripheral nervous system. There is a chain of well known consecutive processes (respiratory alkalosis and hypocapnia, temporary decrease of ionized calcium till to vasoconstriction and possible final hypoxia) that share in this complex influence of hyperventilation. Tetanic neurogenic syndrome, hyperventilation syndrome and panic disorder illustrate three independent but pathophysiologically connected clinical entities in which hypersensitivity of respiratory centers in brain stem plays the most important role (Kukumberg et al., 1998). Saliva in healthy volunteers has already appeared as a very vulnerable and therefore suitable medium reflecting influence of hyperventilation. Therefore we presume resembling deviations of saliva's components as an expression of global hyperexcitability of medula oblongata. According to neurobiological theory of „Suffocation alarm reaction“ (Klein, 1993) just a primary hyperexcitability of respiratory centers is responsible for triggering panic attack. We really found lower levels of pCO₂ in patients with panic disorder before and also after hyperventilation. Another finding in panic

disorder – decrease of sodium also before and after hyperventilation – we may appreciate on hypothetical level only – maybe as a sign of generally changed excitability of neuronal membranes. On the other hand, we did not find any changes in lactate that is considered as a crucial (but to patobiology unknown) link of the pathophysiological chain of panic attack. Moreover, our results were attained in all patients within interparoxysmal period. Perhaps more marked changes would be registered during panic attack itself.

Further study on more representative group of patients is needed to understand better the pathophysiological processes in panic disorder that influence a composition of hitherto rare studied human excretum – saliva*.

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