

PATHOPHYSIOLOGICAL PHENOMENA ARISING FROM HIGH LEVEL GENERAL CONTROLLED HYPERTHERMIA

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High level general controlled hyperthermia (GCH) (up to 43.5 – 44.0°C) occupies a special place among contemporary techniques of intensive therapy. Up to date there is no conception on minimal, rational, and optimal monitoring of patient's safety during high level GCH.

Objectives. To provide pathogenetic foundation of minimal monitoring of patient's safety during high level GCH procedure.

Material and Methods. A total of 162 patients at the age of 16 to 65 years underwent high level GCH procedures between 2000 and 2007. Indications for this procedure were oncologic disease. Dynamic control of the brain biological activity (EEG) and cardiovascular monitoring (systolic and diastolic blood pressure, heart rate) were performed in all cases. All data were estimated and analyzed initially and at one-degree rise in temperature. The temperature was measured in external acoustic meatus.

Results. Clinical analysis of findings of neurophysiologic and hemodynamic monitoring revealed a phenomenon of “biological turning point” (EEG findings) indicating the approach to a “biological zero” in the brain; a phenomenon of “diastolic dystonia” which is specific for high level GCH, naturally accompanies subsequently alternating hyperkinetic and hypokinetic phases of blood circulation system, and indirectly reflects the onset of thermal hypermetabolism; and a phenomenon of “gaseous a-v inversion”, which indirectly discloses the dependence of hemodynamic response on the intensity of thermal stress.

Conclusions. The phenomenon of “biological turning point” appearing as 80% decrease in the brain biopotentials is the most informative criterion for phenomenon of “diastolic dystonia”, safety monitoring of high level GCH. The phenomenon of “diastolic dystonia” has a pathogenetic importance for adequate protection of a patient during high level GCH.