

Renal

Hyperbaric oxygenation in the combined treatment of acute kidney failure

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The paper presents the review of the treatment performed in 183 patients with acute renal failure caused by trauma, myorenal syndrome, surgical, obstetric and urological lesions. All the patients underwent hemodialysis. The majority of the patients manifested hypoxia due to pulmonary edema and abnormal central and visceral hemodynamics, anemia resultant from blood loss and suppression of hemopoiesis, impairment of tissue oxidation-reduction enzymes by uremic toxins. Hemodialysis aggravated hypoxia. A direct relationship existed between arterial hypoxemia and the degree of metabolic acidosis, electrolyte alterations and residual diuresis in oligoanuric stage of acute renal failure. The treatment of 48 relevant patients involved 5-10 sessions of hyperbaric oxygenation (1.5-2.2 atm for 60-90 min). The session usually followed hemodialysis. The response was achieved in arterial hypoxemia, central hemodynamics, peripheral blood, water-electrolyte balance, acid-base equilibrium, uremic intoxication. The frequency of hemodynamic reactions during hemodialysis and pyoseptic complications induced by uremia reduced as well as the need in urgent hemodialysis. The introduction of hyperbaric oxygenation diminished the lethality by 29%.

The characteristics of the clinical picture and treatment of patients with acute kidney failure in obstetrical pathology

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The examination of 45 patients with acute renal failure (ARF) caused by obstetric problems identified 3 types of its clinical course: 1) "pure" ARF; 2) ARF in the presence of sepsis, and 3) ARF in the presence of exogenous intoxication. Types 2 and 3 were more severe and showed higher mortality rates. The average number of hemodialysis sessions per patient was 2.4, 3.6, and 9.8 with types 1, 2, and 3, respectively. The treatment was of multimodality, including suppurative focus debridement, therapeutic measures, hemodialysis, and hyperbaric oxygenation; with types 2 and 3 efforts were made to combat sepsis, hemodynamic and coagulative abnormalities, multiorgan failure. The operative risk during evolved ARF is extremely high; uterine curettage, rational bacterial therapy, refusal of nephrotoxic agents are preferred. Better treatment outcomes were due to a session of 5-10 hyperbaric oxygenation procedures which were performed in anaerobic sepsis, pulmonary edema, arterial hypoxemia. The patients who had received hyperbaric oxygenation had less severe ARF, lower incidence of complications and lower mortality rates, they tolerated hemodialysis better.

Role of reactive oxygen in phospholipase A2 activation by ischemia/reperfusion of the rat kidney.

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PURPOSE: To investigate the role of phospholipase A(2) (PLA(2)) in reperfusion injury of the kidney in an in vivo animal model, renal mitochondrial PLA(2) activity was measured under three different conditions.

METHODS: Male Wistar rats (n = 72) anesthetized with pentobarbital underwent renal ischemia surgically for 45 min and were reperfused for the indicated time (renal ischemia/reperfusion). Treatments included reperfusion for various predetermined periods (phase 1), exposure to hyperbaric oxygen (phase 2), and administration of reactive oxygen species (ROS) scavenger (phase 3). Thereafter, each kidney was harvested, and mitochondrial PLA(2) activity was measured by a radioisotope technique. **RESULTS:** Ischemia/reperfusion resulted in time-related PLA(2) activation in the renal mitochondria up to 48 h of reperfusion after renal ischemia. Renal mitochondrial PLA(2) activity was further augmented by hyperbaric oxygen exposure prior to reperfusion, whereas administration of the ROS scavengers suppressed mitochondrial PLA(2) activity.

CONCLUSION: These data suggest that ROS may play an important role in the in vivo activation of PLA(2) associated with renal ischemia/reperfusion.