Небфропротекторный эффект криоэкстракта плодухи при моделировании острой почечной недостаточности у крыс
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The development of the methods for renal failure prevention and therapy is an important task in clinical and experimental medicine. The research aim was to study the effect of preliminary administration of allogeneic placental cryoextract on excretory function of kidney in rats at different stages of acute renal failure.

Experiments were performed in 4-month outbred male rats (n = 60) weighing 200–250 g, received intramuscularly 50% glycerol solution (10 ml/kg body weight) to simulate acute renal failure (ARF). The animals were divided into the following groups: 1 – intact (control); 2 – ARF model; 3 – ARF model with 3-fold preliminary intramuscular injection of 0.5 ml of placental cryoextract (PCE). Differences were considered as significant at (p < 0.05). The experiments were carried out taking into account the requirements of the Bioethics Committee of the IPC&C, agreed to the statements of European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes (Strasburg, 1986).

Our findings showed a renal function to be compromised in animals of group 2 to day 1, as evidenced by an increased creatinine level (CL) in blood up to (192.5 ± 10.6) μmol/L and a decreased CL in urine down to (2.5 ± 0.5) μmol/L. In group 3, these indices were (47.3 ± 9.2) and (6.2 ± 0.7), respectively. To day 3 the CL in blood group 2 increased up to (569.6 ± 30.0) μmol/L as compared with group 3, where this index was (52.3 ± 9.4) with the norm of (46.0 ± 4.24) μmol/l (group 1). Herewith, in group 2 to days 1 and 3 the protein level in urine was 3 times higher than in group 3. To day 7 in groups 2 and 3 animals the CL in blood made (74.3 ± 7.2) and (48.3 ± 10) μmol/L correspondently. On day 14 the functional indices in animals of these groups were improved: the CL in blood decreased down to (65 ± 4.2) and (27.7 ± 3.2) μmol/L, respectively, while the CL in urine in the group 3 increased up to (10.5 ± 0.9) μmol/L. To day 21 the CL in blood of animals of groups 2 and 3 was above the norm (55.5 ± 9.7) and (66 ± 8.8) μmol/L, and CL in urine was (2.3 ± 0.2) and (7.8 ± 1.2) μmol/L, respectively.

Morphometric analysis showed significant differences in the areas of renal glomeruli in the animals of groups 2 and 3. To days 7–21 in group 2, the area of cortical glomeruli (CC) was significantly less than the norm (1.2–1.4 times), that testified to the ischemia of renal cortex, which lasted for the entire period of the experiment. The CC area of kidneys in group 3 rats to days 7–21 was not significantly different from the control.

Thus, the preliminary administration of PCE has a nephroprotective effect, manifested in the improved functional and morphometric parameters of kidneys at the early stages of acute renal failure development.