THE ROLE OF ESTRADIOL IN THE MAINTANCE OF BRAIN-DEAD ORGAN DONORS: FROM PATHOPHYSIOLOGY TO TREATMENT

1. Donor sex has been suggested to be a factor influencing organ transplantation outcome.

2. Sex hormones possess inflammatory and immune-modulating properties; therefore, immune responses differ between males and females.

3. Brain death (BD) affects organs by multiple mechanisms related to microvascular alterations, hemodynamic effects, hormonal changes, and systemic inflammatory response.

4. The maintenance of organ homeostasis depends on a complex network of systems, including endocrine, immune, and neural systems, and reduction of blood flow may have profound consequences on organ status.

5. The initially high estradiol concentration before BD and high eNOS expression seemed to favor the maintenance of microvascular perfusion/flow in BD-female rats.

6. The 17β-estradiol treatment immediately after BD induction resulted in non-progression of the inflammatory process in the heart, lung, and kidney.

7. Moreover, once the inflammatory process was established, late treatment with 17β-estradiol was effective in reducing inflammation and tissue injury caused by BD in the organs that were studied.

8. The advance of organ preservation with 17β-estradiol therapeutics opens a door for BD-donor management.