Hemofiltration

Hemofiltration is a method based on the elimination of waste products from the individual's circulatory system. In contrast to hemodialysis, filtration uses convective transport of solutes through a hemofiltration semipermeable membrane. Own technical equipment is a **dialysis monitor**. It is a device that contains a blood pump that circulates extracorporeal blood from the patient's vascular access to the filter and back.

Principle

Blood is fed into extracorporeal circulation controlled by a dialysis monitor. Here, ultrafiltration (UF) of blood takes place through a semipermeable membrane, which shows a high degree of permeability even for molecules weighing up to 30,000 Da. This makes it possible to eliminate substances that cannot be removed by hemodialysis with a relatively high rate of success. During ultrafiltration, dissolved substances pass through the membrane together with the solvent (water). The speed of this transfer is influenced by many factors:

- transmembrane pressure – the difference in pressure gradients on both sides of the membrane.

– at zero pressure gradient, UF is zero and increases linearly with increasing effective pressure gradient.

- hemofilter ultrafiltration coefficient – determines the amount of ultrafiltrate at a pressure gradient of 1 torr in 1 hour.

The volume of the filtered liquid from the circulation is then replenished with a substitution solution. This is automatically continuously prepared in the dialysis monitor and consists of treated water and mineral substances in an amount that corresponds to the amount of hemofiltration.

A haemofiltration machine ready for use

Usage

Hemofiltration expands the possibilities of using extracorporeal elimination in addition to hemodialysis and hemodiafiltration. This form of organ support is suitable for long-term use (CVVH – *continuous veno-venous hemofiltration* , respectively CAVH – *continuous arterio-venous hemofiltration*) as a kidney replacement in critical patients, for example with a coagulation disorder. It can also be indicated for acute renal failure in a critical state (renal/non-renal), uremia (oliguria to anuria), general sepsis, ARDS (Acute respiratory distress syndrome), MODS (Multiple organ dysfunction syndrome), hepatorenal syndrome, cardiac failure or metabolic disruption.

Links

References

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