

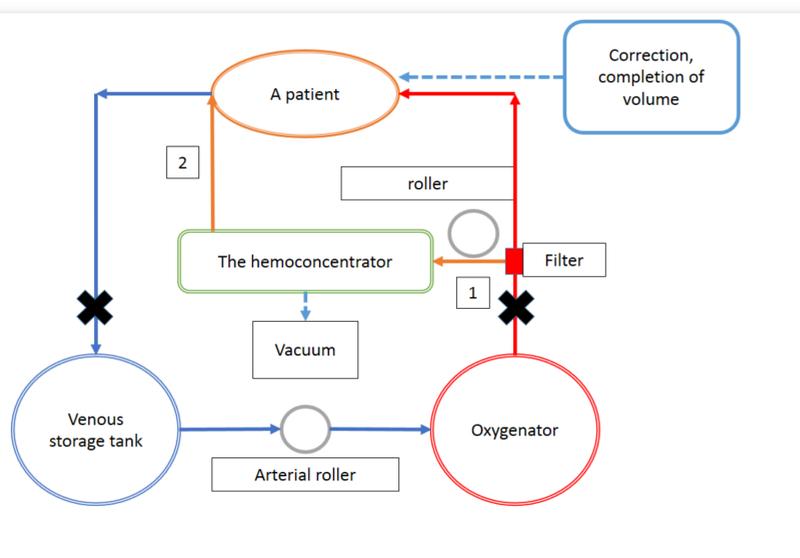
Effect of Modified Ultrafiltration of Blood on the Immune Response of Body in Children

Baizhigitov N.B. (1,2), Kuatbekov K.N. (1,2), Abzaliev K.B. (1),
Mullen A.K.(1,2), Sepbayeva A.D. (1)

Center for Perinatology and Pediatric Cardiosurgery, Almaty, Kazakhstan (1);
Kazakh National Medical University named after S.D.Asfendiyarov, Almaty,
Kazakhstan (2)

BACKGROUND: This paper deals with the scientific analysis of the immune response during cardiopulmonary bypass. Methods of ultrafiltration (UV) and modified ultrafiltration (MUF) have found application in the practice of surgical interventions with the use of artificial circulation (IC) more than 20 years ago and remain relevant at the present time.

METHODS: Authors conducted a retrospective analysis of the cases of children born with congenital heart disease from 2011 to 2016. In our work, we adhered to the modified algorithm for performing modified ultrafiltration of blood. modified ultrafiltration of blood began after stopping the apparatus of artificial circulation. Ultrafilters "Dideco" (Italy) were used with a filling volume of 50 ml, a filtering surface area of 1.06 m² and a pore diameter of 65 thousand Daltons and pumps of the cardiovascular system of Terumo System 1 (Japan).



SCHEME OF MODIFIED ULTRAFILTRATION.

**NOTE: 1 - SUPPLY LINE OF ULTRAFILTER,
2 - OUTLET LINE OF ULTRAFILTER.**

RESULTS: Before the operation, the plasma levels of TNF in the group I was within physiological limits and was 13.4 ± 2.24 pg/ml. In group II, at this stage, the figure was 11.5 ± 0.02 pg/ml. In step 2 to the study, during the CPB, no significant changes in the levels of TNF in the group I did not happen and the scale of it was 16.4 ± 2.61 pg/ml. In group II, at this stage the figure is also not changed significantly and amounted to 14.9 ± 0.28 pg / ml. Phase 3 after UF in Group I, there was a significant change levels of TNF, which have dropped to 9.9 ± 0.84 pg/ml. Group II was contrary significant increase up to 18.94 ± 2.15 pg/ml. Stage 4 studies, 3 hours after the operation, there was a speaker in relation to the plasma concentrations of TNF – its value was significantly decreased to 7.1 ± 5.26 pg/ml.

CONCLUSIONS: These data suggest that ultrafiltration of blood can effectively eliminate unrelated cell receptors and plasma protein cytokines. The use of UV and MUF methods allows controlled removal of excess fluid from the bloodstream, reducing the likelihood of edema development. Removal of inflammatory mediators from the bloodstream reduces the emergence of the syndrome of a systemic inflammatory response.