



# Cytokine mass balance levels in donation after circulatory death donors using hemoadsorption: case series report



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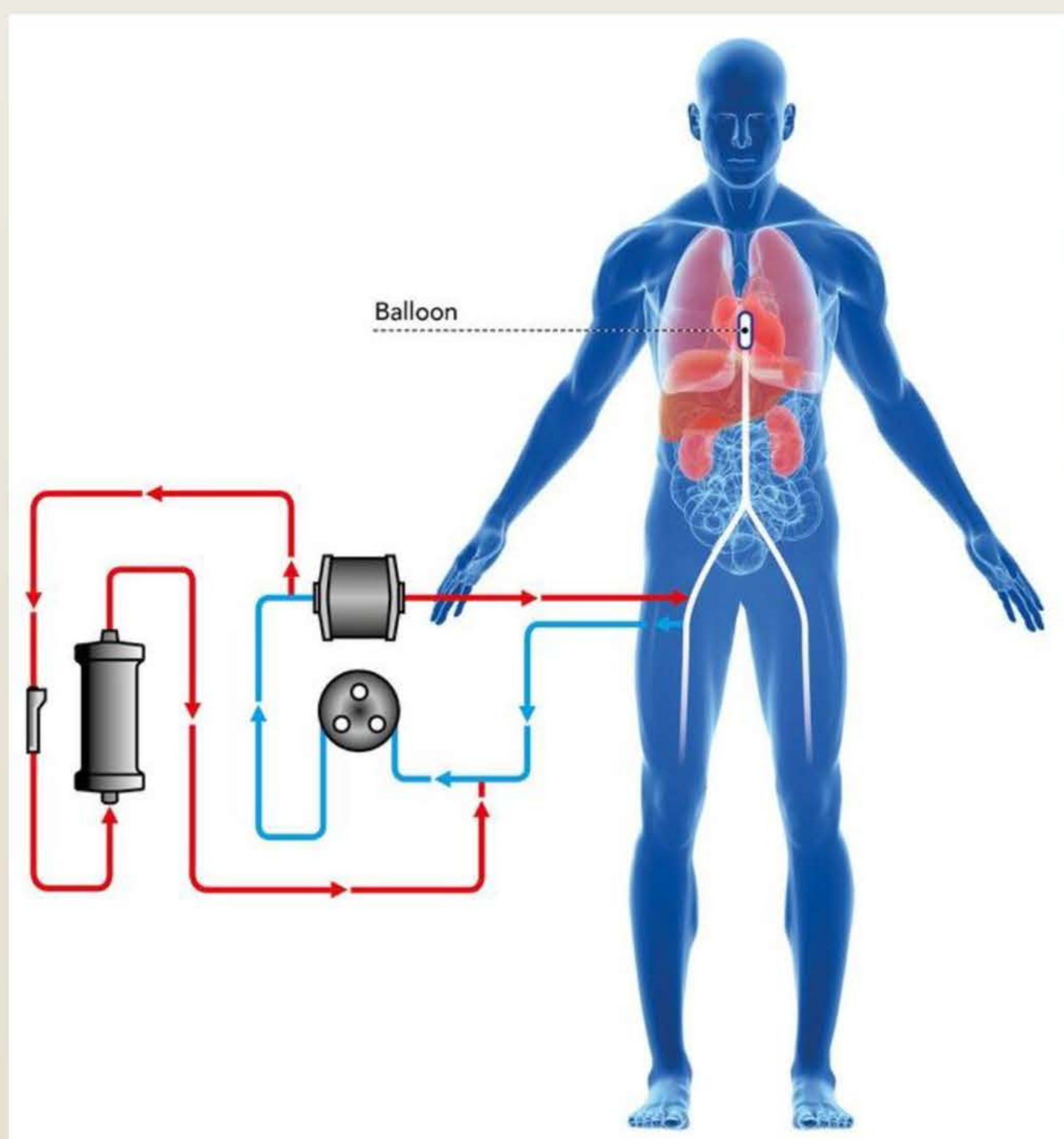
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## BACKGROUND

The shortage of organs available for transplantation has encouraged the expansion of the donor pool by including donation after circulatory death (DCD). In Italy, the “no-touch interval” lasts for 20 minutes, that prolongs Warm Ischemia Time (WIT). WIT is considered to start when systolic blood pressure falls below 50 mmHg and continues until the beginning of the extracorporeal normothermic regional perfusion (NRP), necessary for organ recovery performed with Extracorporeal membrane oxygenator (ECMO). The reperfusion phase leads to a reperfusion syndrome developing a high presence of cytokines and free radicals. This paper describes a case series of inflammatory cytokine levels before and after hemoadsorption during NRP in DCD donors of liver and kidneys.

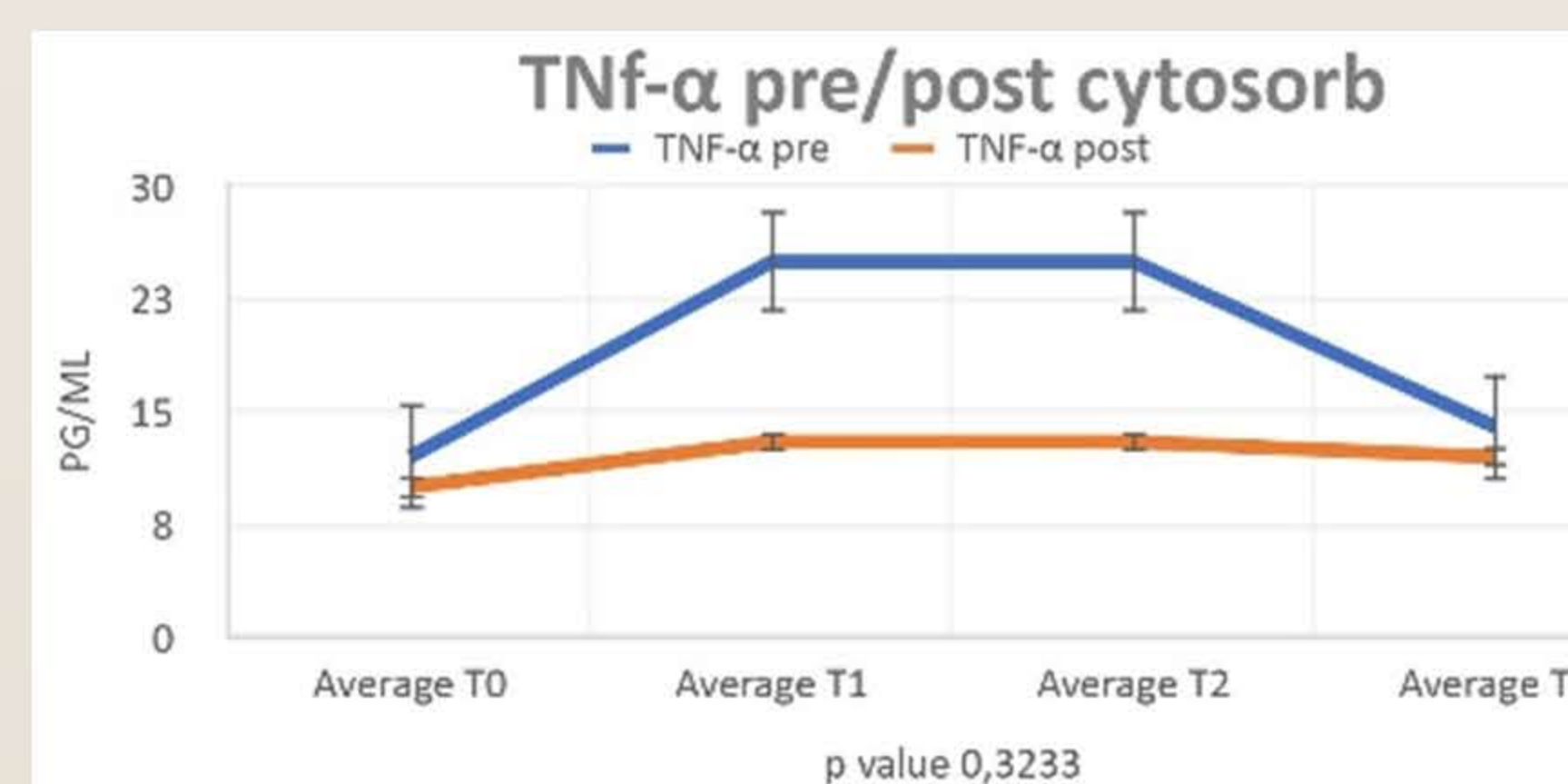
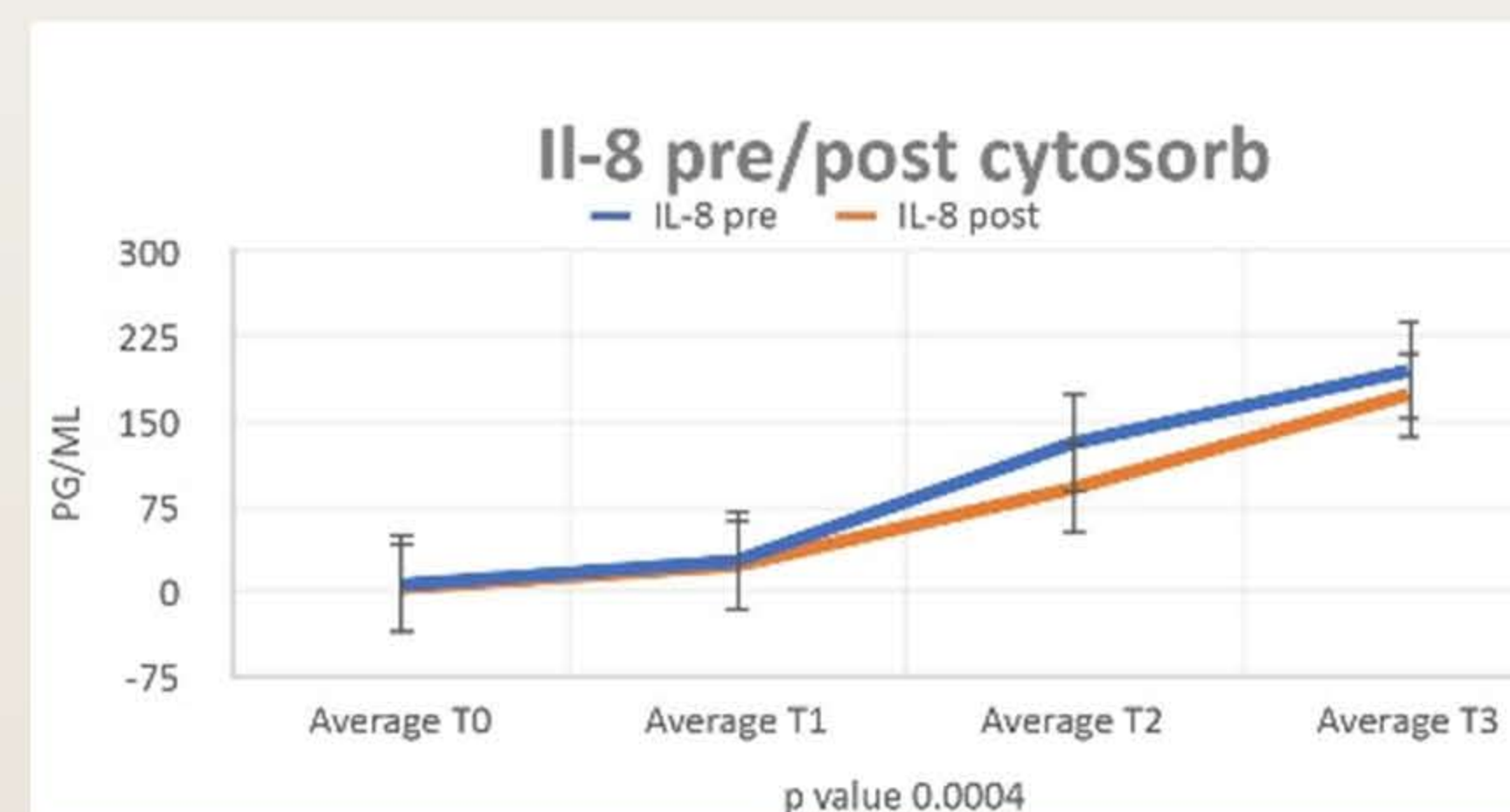
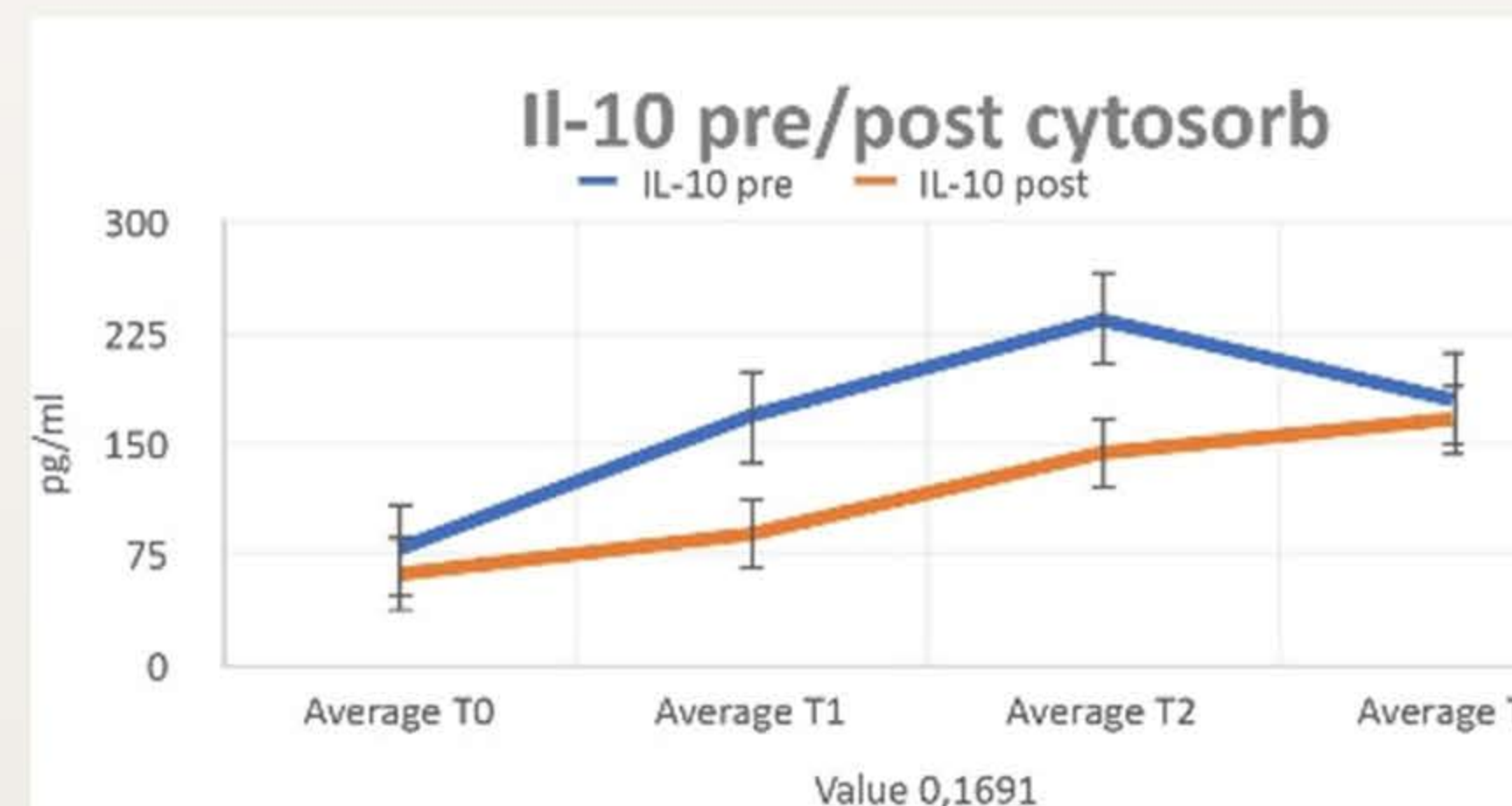
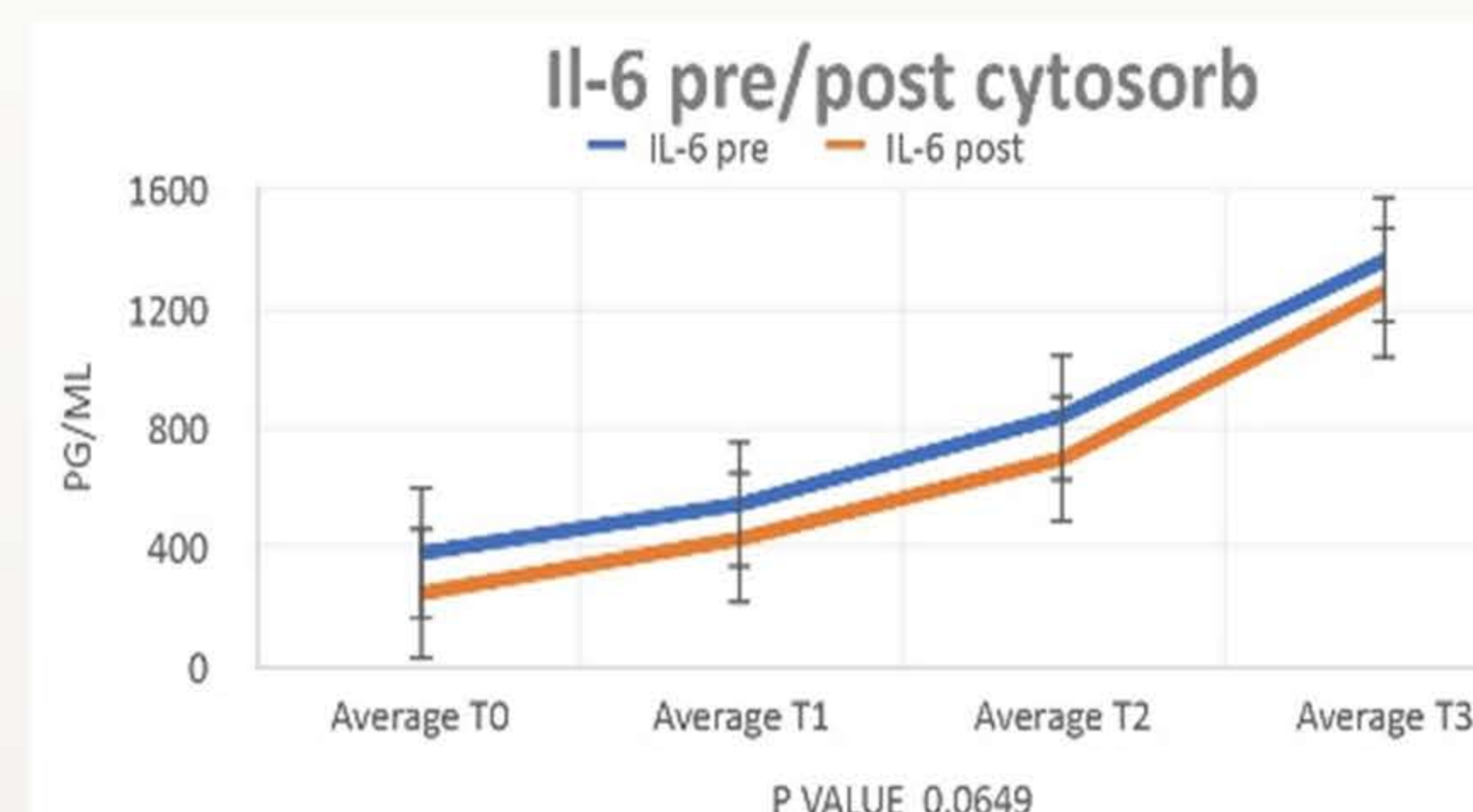
## METHODS

We describe a case series of inflammatory cytokine levels before and after hemoadsorption during NRP in DCD donors of liver and kidneys. All DCD donor subjects, mean age of 58.1±6.2 years without evident critical conditions, no liver or kidney dysfunction known, presented with poor neurological outcomes. After the declaration of cardiac death, we performed NRP through cannulation of the femoral artery and vein. Later, we placed a Fogarty catheter into the contralateral femoral artery, followed by heparin administration and occlusion of the supra celiac aorta to exclude the supradiaphragmatic circle. NRP has been performed in combination with the CytoSorb® cartridge. We measured cytokine mass balance (MB) as well as total removal ratio (RR). MB represents the difference between pre and post adsorption cartridges median IL-6/IL-8/IL-10/TNF-α values multiplied by median NRP flow and median perfusion time. Total RR is the difference between pre and post adsorption cartridges median IL-6/IL-8/IL-10/TNF-α values.



## RESULTS

We observed in our patients a reduction of IL-10 and TNF-α levels during the main phases of NRP, accompanied by a blood lactates reduction. We transplanted all livers and kidneys. Receiving patients spent less than three days in the intensive care unit. Nobody had primary non-function or required renal replacement therapy during the hospitalization period. No apparent device-related adverse events occurred during NRP perfusion.



## CONCLUSION

Finding strategies to implement organ quality is necessary to implement several organs available for donation and reduce the waiting list. Our model shows encouraging data for a possible positive effect of hemoadsorption to implement organ quality.