# Effects of Rheopheresis on haemodialyzed patients with Peripheral Artery Disease (PAD)


*Martone M, Berbecar D, Boer E, Bosco M, Mattei P, Milutinovic N*
Complex Operative Unit of Nephrology and Dialysis, Presidio Ospedaliero di Gorizia-Monfalcone, Italy

## Background

Peripheral Artery Disease (PAD) is a clinical condition characterised by obstructive lesions of the arteries with hypoperfusion of the lower limbs. The etiology is mostly atherosclerotic, the worldwide prevalence varies from 4 to 12% and is higher in haemodialyzed patients with major clinical complications. This clinical condition often leads to skin ulcers occurrence and consequent lower-extremity amputations. Unfortunately, current therapeutic strategies do not always provide real effectiveness in the treatment and care of PAD. Double Filtration Plasmapheresis (DFPP) is an alternative extracorporeal treatment aimed to improve microcirculatory disorders thanks to the elimination from blood of specific macromolecules responsible for the higher plasma viscosity.

## Methods

We evaluated the effect of DFPP in five haemodialyzed patients affected by severe PAD (Fontaine stage IV) with involvement of micro or macrocirculation, non-responder to the standard care and surgical revascularization. DFPP was carried out using the automatic system Plasmapher/Apherlungs: plasma obtained with a plasmafilter is conveyed into the fractionator filter Evaflux 5A20, which allows a semi-selective plasma purification from high molecular weight proteins (such as LDL-cholesterol, fibrinogen, a2-macroglobulin and fibronectin), resulting in a lowered blood plasma viscosity and an improvement of the microcirculation. Treatments were performed twice a week for the first two weeks and once a week for the consecutive eight weeks, for a total of 12 DFPP treatments per patient. One plasma volume was treated in the first four sessions, then one and a half for the last eight sessions.

## Results

In most of the treated patients we observed a stabilization of laboratory parameters associated to a persistence of low values of inflammation and blood plasma viscosity. It has not been possible to measure the decrease of fibrinogen and a2-macroglobulin. Nevertheless, three to five patients referred an improvement of clinical symptoms at the end of the cycle. Furthermore, we observed a higher clinical benefit in patients with disorders of the microcirculation instead of the principal arteries.

## Conclusion

We showed that DFPP is an effective and safe treatment for patients with microcirculatory disorders caused by high molecular weight proteins accumulation, who show inadequate response to the pharmacological and surgical therapies.