

# Controlled ultrafiltration to reduce intradialytic complications

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## Introduction

Inadequate ultrafiltration, which withdraws more water from the circulating blood than the surrounding tissue is supplying, can lead to interdialytic hypotension and cramps, even if the patient is hyperhydrated. In order to keep intravascular blood volume stable during haemodialysis, we use a device which measures changes in blood volume and controls fluid removal. It is a non-invasive and accurate automatic tool to predict and therefore prevent episodes of complication. The ultrafiltration rate is adjusted automatically according to the individual relative blood volume limit of each patient.

## Objectives

To study the occurrence of intradialytic complications and interdialytic hyperhydration among patients undergoing treatment with blood volume controlled ultrafiltration.

## Methods

72 patients were involved in this study. 36 patients were in the study group and treated with controlled ultrafiltration using a device which measures changes in the blood volume and a control group of 36 patients was treated without using this device. The number of hypotension episodes, cramps and the levels of interdialytic weight gain were compared.

## Results

Thanks to the automatic regulation of the ultrafiltration rate, less episodes of complication were observed (Fig.1-2).

Initially, 11 patients (30.5%) in each group had hypotension; three patients (8.3%) in the main group and five (13.9%) in the control group suffered from cramps; 26 (72%) patients in each group suffered an episode of interdialytic hyperhydration.

At the end of the study, two patients (5.5%) in the main group and nine (25%) in the control group had hypotension; two patients (5.5%) in the main and four (11%) in the control group suffered from cramps; hyperhydration levels remained over 15% among 13 patients (31%) in the main group and 22 patients (61%) in the control group.

## Conclusion

Monitoring changes in blood volume and controlling the fluid-removal may reduce haemodialysis complications and facilitate a reduction in interdialytic weight gain. The application of a controlled ultrafiltration level during the procedure gives an opportunity to ensure an individual approach for each individual patient.

## References

1. Daugirdas JT: Pathophysiology of dialysis hypotension.
2. KDOQI Clinical Practice Guidelines for Cardiovascular Disease in Dialysis Patients.

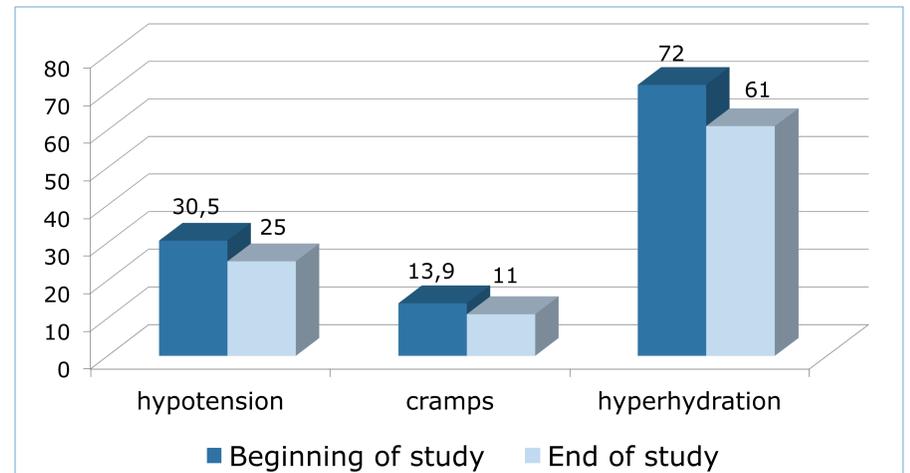


Figure 1: Number of complications in the control group

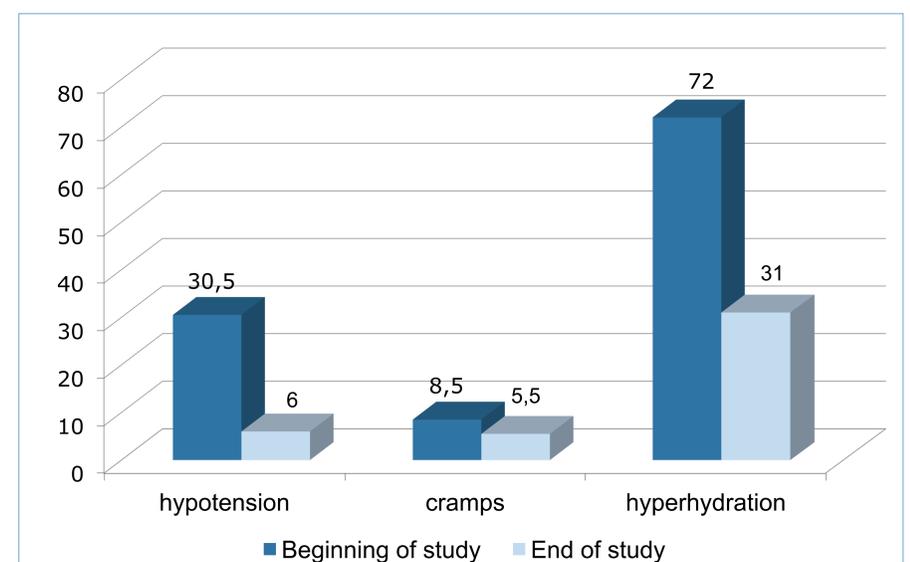


Figure 2: Number of complications in the main group



Figure 3: Blood Volume Monitor