Introduction and Aims: Protein-bound uraemic toxins play an important role in uraemic complication. But haemodialysis (HD) cannot efficiently remove the protein-bound uraemic toxins because of their high albumin-binding property. The object of present study is to investigate the effectiveness of using broad type dialysis membranes on the survival of HD patients.

Methods: A retrospective study was designed. Clinical recordings from all patients initiated on HD between April 2005 and March 2012 in the dialysis center of Kawashima hospital, Tokushima, Japan. Patients were classified according in two groups by "broad" pore type dialysis membrane (albumin sieving coefficient: 0.03 ≤ SC) group, "sharp" pore type dialysis membrane (albumin sieving coefficient: SC < 0.03) group. There are not statistically significant differences in patient’s baseline characteristics (age, gender, HD duration, eKt/V, Hb, serum albumin level) between two groups. Survival probability was generated using the Kaplan-Meier method.

Results: Data from 703 patients were included in the analysis. The "broad" group consisted of 117 patients (mean age 61.1 years, 73 male, 44 female), the "sharp" group consisted of 586 patients (mean age 61.0 years, 378 male, 208 female). The 1-, 2-, 3-, 5-, and 7-year patient survival rates were 92%, 85%, 80%, 78%, and 73% for "broad" group, and 98%, 94%, 89%, 80%, and 73% for "sharp" group. The patient survival rates were significantly lowest for the "broad" group in 5 years from the initial dialysis therapy. However, after 5 years, there is no significant changed of the survival rate between the "broad" pore type dialysis membrane and "sharp" pore type dialysis membrane.

Conclusions: To increase the clearance of middle-to-large molecules, synthetic membranes with high water permeability (high-flux membranes) were introduced recently. There are a lot of uremic toxins, especially protein-bound solute with biological activities, and it is difficult to remove these solutes without broad pore dialysis membranes. And it is safe to use the broad type membrane at the initial stage of dialysis treatment within 5 years. In conclusion, the results of this study suggested that HD treatment with the using broad pore dialysis membrane plays an important role in the outcome of chronic long-term HD patients.