

Recent advances in the understanding of the peritoneal membrane

Seghers, François^a; Tintillier, Michel^a; Morelle, Johann^{a,b}

Author Information 

Current Opinion in Nephrology and Hypertension 34(1):p 77-84, January 2025. | DOI: 10.1097/MNH.0000000000001028

Abstract

Purpose of review

The efficiency of peritoneal dialysis (PD) as a life-sustaining replacement therapy for patients with kidney failure relies on the integrity and function of the peritoneal membrane. Here, we review the most recent advances in the understanding of the peritoneal membrane and its role in PD.

Recent findings

A recent update of the ISPD guidelines proposed a revised definition of membrane dysfunction, emphasizing the importance of fluid balance in patients treated with PD and identified three main mechanisms leading to insufficient peritoneal ultrafiltration (UF). The Bio-PD study, the first genomewide association study in PD, demonstrated that 20% of the interindividual variability in the peritoneal solute transfer rate is genetically determined, and identified several loci of potential relevance for peritoneal transport. A candidate-gene approach identified and characterized a common and functional variant in the promoter of the *AQP1* gene associated with water transport and clinical outcomes in PD. Innovative strategies to preserve the integrity of the peritoneal membrane and to enhance UF are also discussed, including the use of gliflozins; steady glucose concentration PD; modulation of GLUT proteins; and cytoprotective additives.

Summary

A comprehensive understanding of the peritoneal membrane and of the mechanisms driving UF may help individualizing PD prescription and improving outcomes in patients treated with PD.
