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Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

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Peritoneal Membrane Dysfunction: Evaluation and Management

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Peritoneal dialysis (PD) utilizes the peritoneal membrane lining the abdomen as a filter to remove excess fluids and toxins from the blood. Each individual's membrane is unique, requiring personalized dialysis prescriptions. The peritoneal equilibration test (PET) is crucial for measuring membrane function at the start of dialysis and monitoring any changes over time, which may necessitate adjustments in the dialysis regimen. The most common problem with the peritoneal membrane occurs when fluid is not removed as well as it should be. This happens when toxins in the blood cross the membrane more quickly than they should. This is referred to as a fast peritoneal solute transfer rate (PSTR). Since more efficient fluid removal is associated with better outcomes, developing a personal PD prescription based on the person's PSTR is critically important. A less common problem happens when the membrane fails to work properly (also called membrane dysfunction) because the peritoneal membrane is less efficient, either at the start of treatment or developing after some years. If membrane dysfunction gets worse over time, then this is associated with progressive damage, scarring and thickening of the membrane. This problem can be identified through another change of the PET. It is called reduced 'sodium dip'. Membrane dysfunction of this type is more difficult to treat and has many implications for the individual. If the damage is major, the person may need to stop PD. They would need to begin haemodialysis treatment. This is a very important and emotional decision for individuals with kidney failure. While the frequency of membrane function tests is unclear, repeated assessments are advisable when fluid removal becomes problematic. Further research is essential to understand the impact of routine evaluations on treatment outcomes, especially given the growing emphasis on home dialysis options like PD in response to global health challenges.

Keywords: peritoneal dialysis, membrane, PET, ultrafiltration