Timing of Dialysis Initiation in Peritoneal Dialysis Patients: A Retrospective Review for Quality Improvement

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INTRODUCTION

At present, greater than 2 million people worldwide require maintenance dialysis. Despite this, the appropriate timing of dialysis initiation remains unclear. The optimal degree of estimated glomerular filtration rate loss in which dialysis initiation provides significant morbidity or mortality advantages has been difficult to ascertain. Current Canadian guidelines recommend dialysis initiation in: 1) patients with estimated glomerular filtration rates less than 15 mL/min per 1.73 m^2 and uremic symptoms or other clinical indications for dialysis initiation, or 2) asymptomatic patients with estimated glomerular filtration rates less than or equal to 6 mL/min per 1.73 m^2. An intent-to-defer strategy is advocated as the preferred approach. Despite these clinical recommendations, clinical practice in Canada remains widely variable.

AIM

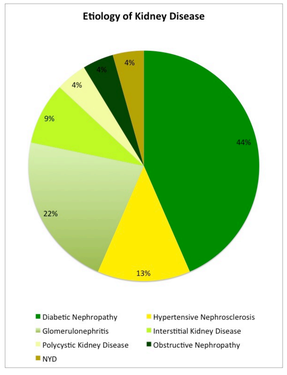
Our study aimed to assess the timing of dialysis initiation in peritoneal dialysis patients, as well as the rates of adherence to current Canadian clinical practice guidelines.

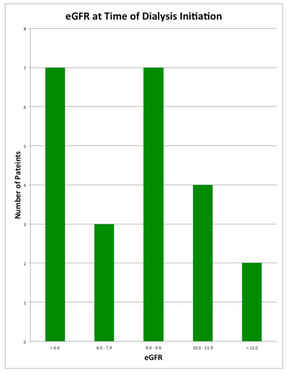
METHOD

We conducted a single center retrospective review of incident peritoneal dialysis initiation events from June 2015 - May 2016. All adult patients over the age of 18 who were initiated on chronic peritoneal dialysis were included. Exclusion criteria included: 1) patients transitioning from other end stage kidney disease treatment modalities, specifically hemodialysis and transplantation, and 2) patients with acute kidney injury. Basic demographic data was collected, including age, gender, medical comorbidities and etiology of kidney disease. Estimated glomerular filtration rates were calculated using the CKD-EPI equation for all creatinine measurements in the three months prior to initiation of peritoneal dialysis. The primary outcome was the estimated glomerular filtration rate at which dialysis was initiated. Using the calculated estimated glomerular filtration rates for the three months prior to initiation of dialysis, a disease trajectory was also determined. All uremic symptoms were collected, together with any non-uremic indications for dialysis initiation. Documented uremic symptoms included nausea, vomiting, anorexia, dysguesia, fatigue, restless legs, pruritis, muscle cramping, and sleep disturbance. The severity of uremia was determined by the absolute number of uremic symptoms. Differences in nephrologist practice patterns were visually documented.

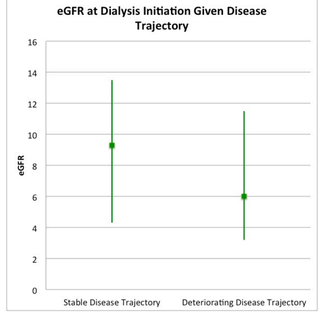
RESULTS

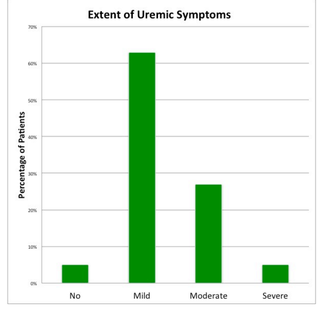
A total of 53 incident peritoneal dialysis initiation events were recorded during our study period, and 23 patients met criteria for inclusion into the study. The age of the patients ranged from 40-79 years, with an average age of 63 years. 74% of patients were male, and 52% were diabetic. The etiology of kidney disease varied widely, but 57% were attributed to diabetic nephropathy or hypertensive nephrosclerosis.

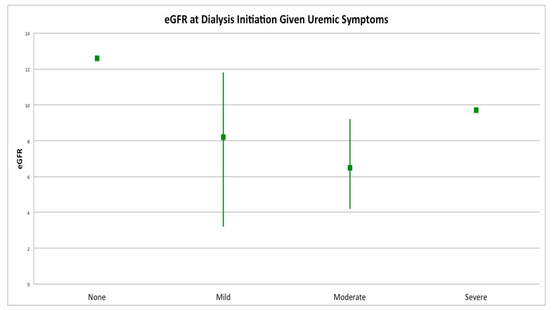




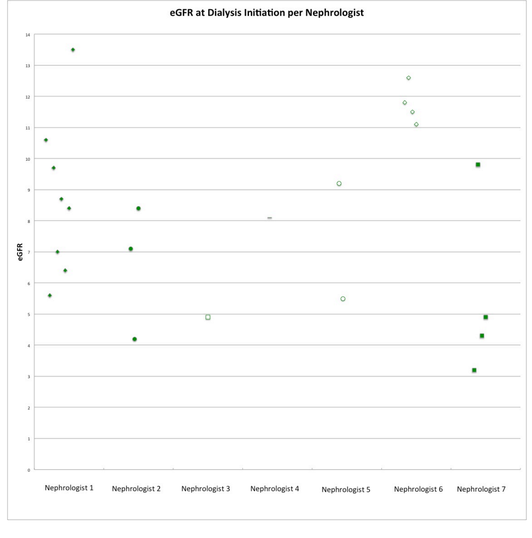
The estimated glomerular filtration rate at which peritoneal dialysis was initiated ranged from 3.2 to 13.5 mL/min, with a mean of 8.1 mL/min and a median of 8.4 mL/min. A stable estimated glomerular filtration rate was documented in 59% of patients, with a deteriorating estimated glomerular filtration rate noted in the remainder. Patients with a stable estimated glomerular filtration rate, as compared to a deteriorating disease course, were initiated on dialysis at a higher estimated glomerular filtration rate.







All patients were initiated on peritoneal dialysis for uremic symptoms or decline of estimated glomerular filtration rate, as opposed to other clinical indications. Patients were classified into mild, moderate or severe uremia based on the absolute number of uremic symptoms. Most patients were initiated on dialysis with mild uremia. The severity of uremia did not appear to correlate with the estimated glomerular filtration rate at the time of dialysis initiation. The timing of peritoneal dialysis initiation varied according to each nephrologist's clinical practice pattern.



CONCLUSIONS

Our results reveal that there is a wide range of estimated glomerular filtration rates at which peritoneal dialysis is initiated. Approximately one third of our patients were initiated on dialysis at an estimated glomerular filtration rate less than the recommended lower threshold of 6 mL/min per 1.73 m^2. The trajectory of the estimated glomerular filtration rate in the three months prior to dialysis initiation did not appear to predict the perceived need for dialysis therapy, although those with a deteriorating disease trajectory were more likely to initiate peritoneal dialysis at a lower estimated glomerular filtration rate.

The indication for initiation of peritoneal dialysis in all patients was uremic symptoms or decline of estimated glomerular filtration rate. There were no dialysis initiation events for other clinical indications. Most patients were initiated on peritoneal dialysis with mild uremia. The extent of uremic symptoms did not appear to correlate with the estimated glomerular filtration rate at the time of dialysis initiation. Considerable variation in practice patterns were apparent between each nephrologist.

Overall, the timing of peritoneal dialysis initiation in our center was generally adherent to current Canadian clinical practice guidelines. An intent-to-defer strategy was not uniformly applied, however, as evidenced by considerable practice variation together with poor correlation between estimated glomerular filtration rate at initiation, disease trajectory and burden of uremic symptoms.

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