The Effects of Diabetes on the Kidneys, Dialysis and the Elderly

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Clients living with diabetes comprise approximately 30% of Canada’s ESRD (end stage renal disease) population. In addition, a risk factor in the development of Type 2 diabetes is age. Renal function ultimately declines as a person advances in age due primarily to vascular diseases. Accordingly, the elderly cohort accounts for one of the fastest growing groups requiring dialysis therapy. Keeping this perspective in mind, the focus of this article will be to address the role of the renal system and how diabetes affects kidney function, to explore patient criteria required to initiate dialysis treatment, to analyze the management of blood glucose levels once dialysis treatment is prescribed and to review nursing care plan considerations for this group.

The function of the kidneys is to regulate endocrine processes such as RBC synthesis, Vitamin D secretion and blood pressure maintenance. As well, the renal system plays a primary role in the regulation of electrolyte/fluid balance, the PH buffer system and in the elimination of waste products. When kidney function declines, obviously these processes become impaired. As a result, systemic manifestations such as anemia, uremia, hypertension and fluid overload become evident.

Overtime, individuals with diabetes can develop a condition called diabetic nephropathy. The nephropathy causes sclerotic changes in the kidney structure. These structural changes lead to the development of proteinuria and declining glomerular filtration rates in the kidney.

When kidney function deteriorates to approximately 10%, homeostasis is impacted. At this stage, the Canadian Society of Nephrology (CSN) Clinical Practice Guidelines recommend that analysis of the client’s blood chemistry, nutritional status and psychosocial impact of dialysis treatment should be assessed prior to initiating a dialysis modality. Once the client has reached ESRD and symptoms of uremia or nutritional deficits are evident, dialysis therapy should be initiated. Age is not an exclusion criteria for renal replacement therapy.

Several management strategies are required once a person has made the informed choice of commencing with dialysis. Specifically, clients with diabetes will continue to need frequent glucose monitoring and HbA1c levels. Regulation of blood glucose can become problematic once the client starts dialysis. In particular, hypoglycemia can occur during a hemodialysis treatment if the person does not eat before their therapy. Moreover, signs of hyperglycemia such as thirst and lethargy can be incorrectly assessed as systemic effects of renal failure instead of hyperglycemia symptoms. Blood glucose levels should be checked at home and while a patient is receiving hemodialysis. Individualized blood glucose monitoring plans are required and should be based on the type of diabetes present, trends in blood glucose levels and the pharmacological/diet management of the disease. Dietary and fluid restrictions (typically 500 ml/day + urine output) should be client specific and made in consultation with the dietician. The diet plan is also dependent on the treatment regimen. Peritoneal dialysis provides a continuous process of solute and fluid removal. Therefore, clients receiving this mode of treatment do not require the same degree of protein, potassium and fluid restriction as hemodialysis clients. Pharmacological management of diabetes will need to be reevaluated in the context of the existing renal failure. Insulin requirements or oral hypoglycemics such as Diabeta (Metformin) is contraindicated in renal patients due to the development of lactic acidosis) may need to be adjusted once diet modification and/or weight loss occurs. Furthermore, insulin needs may be reduced due to impaired clearance of insulin by the kidney.

Consequently, if renal therapy is to be successful in the elderly client with diabetes, a plan of care that is comprehensive, ongoing and client focused is required. Care plan considerations include foot care strategies, blood glucose monitoring, and routine eye examinations. As well, nursing assessment must be conducted on the client’s self-care practices with respect to medication and diet regimens as deficiencies in self-care activities increase the risk of developing complications such as medication interactions and malnutrition. The elderly patient’s medication regimen is typically complex, especially with the existence of co-morbidities. A teaching plan that includes prescribed medication review is needed to promote compliance and to prevent potential drug complications. In relation to nutritional needs, the elderly person is susceptible to nutritional deficits. Various psychosocial issues can be identified as causative factors such as budget restraints, decreased appetite and difficulty with food preparation. Poor nutrition has been linked to increased incidence of morbidity and mortality in client’s receiving dialysis. Therefore, it is salient that nurses address knowledge deficits in relation to nutritional intake and continue to monitor weight loss patterns, protein consumption and serum albumin levels in the elderly client.

References:


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