

Chronic Kidney Disease in the elderly

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The worldwide increasing population has thrown new challenges of disease associated with ageing like cardiovascular disease and chronic kidney disease (CKD). The prevalence of CKD in elderly population in the US in the people of age \geq 70 years old in the National Health and Nutrition Evaluation Survey (NHANES) using CKD-EPI equation was 46.8% and by MDRD study equation it was 46.3%⁽¹⁾. Similar increasing incidence of ESRD is being reported from Europe ⁽²⁾. While the ESRD population is well studied, there are limited number of studies in the non dialysis CKD population that has restricted estimates of their number.

The cause of CKD often is not readily apparent in many elderly patients. The most common associations are hypertension and diabetes and other risk factors include atherosclerosis, history of acute kidney injury (AKI) and obesity ⁽³⁾. Elderly are predisposed to AKI due to multiple risk factors and may fail to return to baseline GFR after an episode of AKI.

CKD is defined as GFR <60 ml/min/1.73 m² and/or kidney damage for 3 months. The presence of albuminuria is most commonly used to define kidney damage ⁽⁴⁾, while eGFR is usually estimated using equations that include serum creatinine in conjunction with demographic characteristics. The most common creatinine based equations are MDRD and CKD-EPI equation. Some authors suggest that eGFR equations should be used for staging rather than diagnosing CKD and for drug modification and the diagnosis of CKD can better be done with longitudinally following up the disease ⁽⁵⁾. Although still mired in controversy that how to define CKD in elderly, there is ample evidence to support that reduced eGFR and albuminuria either alone or in combination are consistently associated with increased incidence of kidney failure, cardiovascular disease, cognitive impairment and all cause mortality in CKD ⁽⁶⁾.

Due to the overall increased prevalence of CKD, particularly in the elderly CKD screening should be offered to patients with risk factors and those over the age of 60 yrs (KDIGO) ⁽⁴⁾. The clinical presentation of ESRD in elderly may also differ from that of younger patients. Patients may present with uremic symptoms with only modest elevation in serum creatinine and such uremic manifestations may be attributed to the 'ageing process' or other complaints. Occasionally patient may present with unexplained dementia or change in personality or behavior, unexplained exacerbation of congestive heart failure or simply a change in sense of well being.

There is limited information for evidence based guidelines and recommendations for managing CKD in the elderly. The measures to retard progression like control of hypertension, diabetes, dyslipidemia, diet and exercise with periodic monitoring should be undertaken. As the disease advances patient should be treated for complications like anemia, acidosis and metabolic bone disease due to calcium phosphorus metabolism and in advanced stages of ESRD opportunity for RRT should be offered.

Geriatric issues such as frailty, quality of life, life expectancy, end of life issues, pharmacokinetics and pharmacodynamics of drug and treatment compliance must be addressed when planning management of CKD in elderly. AKI may be precipitated by nephrotoxic antibiotics, NSAID, radiocontrast exposure, ACE or ARB and diuretics must be recognized and avoided.

Prescription or not to prescribe RRT in elderly is not straightforward. Elderly CKD patient should receive same level of care as for younger population and should be made to decide about appropriate RRT.

In most countries hospital haemodialysis is the principal form of RRT in elderly. Creation of vascular access well in time is important. AV fistula are most preferred however many elderly may not have suitable vessel for creation of AVF due to

atherosclerosis, diabetes and hypertension and such patients are offered arteriovenous graft. HD offers many advantages: the treatment time is short, it allows socialization with staff and other patients and there is continuous follow up by medical team.

PD is another mode of RRT which can be offered to elderly however it is underutilized because of technical contraindications or local health care practices, financing, reimbursement pattern. Registry based data and meta analysis have shown almost equal and comparable outcome in both modalities in elderly population ⁽⁷⁾. The common contraindication for PD are functional and cognitive impairment. PD may have advantage as it is continuous home based therapy with better hemodynamic stability, steady state metabolic control and hypertension control. The potential for disrupting patient-family relationship is low and the need for potentially expensive and uncomfortable transport to and from dialysis unit is avoided ⁽⁸⁾.

Assisted automated peritoneal dialysis (AAPD) is another mode of PD which can be offered to frail and dependant elderly. The choice for PD or HD can be made on the basis of technical feasibility, patient preference, local expertise and financial consideration.

Transplantation should be considered for the management of elderly with ESRD because studies have shown that elderly recipient benefit from renal transplantation by significant reduction in mortality 41 % compared with wait listed ESRD patients ⁽⁹⁾.

Elderly patient with CKD ESRD should be explained about all modalities for RRT, their risk overall outcomes and allowed to make informed decision. If a patient chooses option of 'no dialysis' aim should be to treat anemia, acidosis, fluid overload, hypertension and active end of life care should be given⁽¹⁰⁾. The finding of success for maximum conservative management have also demonstrated equivalent outcome versus haemodialysis in elderly population by some authors ⁽¹¹⁾.

Key points

- Age related decline in kidney function does not translate into CKD in all individuals with advancing age.
- Most clinical guidelines extrapolate from outcomes that are determined from younger population but the elderly require special consideration because of their frequent comorbidities, frailty, social isolation & financial limitations.
- Strategies to retard progression must be comprehensive to their respective goals and

patients need to be adequately informed about the likely course and prognosis of their disease to guide them in making choices about treatment options.

References

1. Levey AS, Stevens LA, Schmid CH, et al. CKD-EPI (Chronic kidney disease. Epidemiology collaboration). A new equation to estimate glomerular filtration rate. *Ann Intern Med* 2009; 150(9) :604-612.
2. Krammer A, Stel V, Zoccali C, et al. ERA-EDTA Registry. An update on renal replacement therapy in Europe. ERA-EDTA Registry data from 1997 to 2006. *Nephrol Dial Transplant* 2009;24(12);3557-3566.
3. Stevens LA, Vishwanathan G, Weiner E. Chronic kidney disease and end-stage renal disease in the elderly population: current prevalence, future projections, and clinical significance. *Adv Chronic Kidney Dis.* 2010 Jul; 17(4):293-301.
4. Kidney Disease Improving Global Outcomes (KDIGO) CKD Work group. KDIGO Clinical Practice Guidelines for the evaluation & management of chronic kidney disease. *Kidney Int.* 2013; S3(4):1-150.
5. Rule AD, Glassock RJ. GFR estimating equations: getting closer to the truth ?. *Clin J Am Soc Nephrol.* 2013 Aug;8(8):1414-20.
6. Manjunath G, Tighiouart H, Coresh J, et al. Level of kidney function as a risk factor for cardiovascular outcomes in the elderly. *Kidney Int.* 2003; 63(3):1121-9.
7. Selgas R, Cirugeda A, Fernandez-Perpe'n A, et al. Comparisons of haemodialysis and CAPD in patients over 65 years of age: a meta analysis. *Int Urol Nephrol* 2001; 33: 259-264.
8. Brown EA, Johansson I, Farrington K, et al. Broadening Options for long term Dialysis in the Elderly (BOIDE): differences in quality of life on peritoneal dialysis compared to haemodialysis for older patients. *Nephrol Dial Transplant* 2010; 25:3755-63.
9. Rao PS, Merion RM, Ashby VB, et al. Renal transplantation in elderly patients older than 70 yrs of age: Results from the Scientific Registry of Transplant Recipients. *Transplantation* 2007;83:1069-74.
10. Brunori G. Treatment of chronic kidney disease in the elderly: diet or conservative management. *J Nephrol.* 2012; 25 Suppl 19:S28-31.
11. Carson RC, Juszczak M, Davenport A, et al. Is maximum conservative management an equivalent treatment option to dialysis for elderly patients with significant comorbid disease? *Clin J Am Soc Nephrol.* 2009 Oct;4(10):1611-9.