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The forgotten side of CKD: kidney disease triggers cognitive impairment,even in early stages

Chronic kidney disease (CKD) is increasingly recognized as a systemic condition. It also impacts upon other organ systems and in recent years much attention has focussed specifically on the link between the kidneys and the heart. There is also an association between brain dysfunction and kidney disease; new data shows that even mild CKD correlates with impairment of cognitive function. A new review by Professor Giovambattista Capasso summarizes the current evidence in this field.

The link between brain dysfunction and advanced kidney disease was first noted in 1930, so it is not a new finding. Experts spoke of 'dialysis dementia' or 'uremic encephalopathy'. What is new, however, is the finding that mild cognitive impairment (MCI) may already be present in earlier stages of CKD, affecting approximately one in two CKD patients (prevalence varies in studies between 30% and 60%). In contrast to 'normal' dementia, CKD-related MCI is not age-related, meaning the cognitive impairment exceeds that expected of the normal aging process. It usually worsens with declining glomerular filtration rate (GFR) of patients – the lower the GFR, the higher the risk of being affected by cognitive impairments.

The pathogenesis appears complex, involving a variety of factors besides vascular disease – the most frequent trigger for 'standard' dementia in elderly people. Dialysis does not help or stop the process of cognitive decline, thus experts believe that factors which are not corrected completely by dialysis, for example the clearance of middle molecules, uncontrolled secondary hyperparathyroidism and anemia, may further the process of cognitive impairment.

'One interesting finding, though, is that kidney transplantation appears to slow cognitive decline', explains Professor Giovambattista Capasso, one of the authors of a review recently published in NDT. 'This highlights the importance of transplantation, because we have no other intervention strategies once cognitive decline has been diagnosed in CKD patients.'

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The paucity of intervention strategies is the reason why there is no routine screening for MCI in CKD patients. The authors of the review emphasize that cognitive decline is one of many manifestations of brain damage that clearly accompany the decline of kidney function. Other manifestations include sleep disorders and depression, both of which are also common in CKD patients. 'Chronic kidney disease is an illness that obviously affects the body and the brain. The latter has been neglected by research, but new tools in neuroscience, such as tractography or two-photon microscopy hold out the promise of gaining further insights in the pathogenesis of MCI so that we might identify therapy targets and be able to treat it one day', explains Professor Capasso.

'Until then, we have to be aware that CKD is a severe disease which affects not only the kidneys, but also other organs systems and the brain – even in early stages. This is why we should strengthen CKD prevention strategies and raise awareness for this illness that is much more severe than most people think', adds Professor Carmine Zoccali, president of the ERA-EDTA.

[1] https://doi.org/10.1093/ndt/gfz051

About ERA-EDTA

With more than 11,000 members, the ERA-EDTA ("European Renal Association – European Dialysis and Transplant Association") is one of the biggest nephrology associations worldwide and one of the most important and prestigious European Medical Associations. It supports basic and clinical research in the fields of clinical nephrology, dialysis, renal transplantation and related subjects. It also supports a number of studies as well as research groups and has founded a special "Fellowship Programme" for young investigators as well as grant programmes. In order to involve young nephrologists in all its activities, ERA-EDTA has created the "Young Nephrologists' Platform" (YNP), a very active committee whose board includes members who are 40 years old or younger. In addition, it has established various working groups to promote the collaboration of nephrologists with other medical disciplines (e.g. cardiology, immunology). Furthermore, a "European Renal Best Practice" (ERBP) advisory board was established by the ERA-EDTA to draw up and publish guidelines and position statements. Another important goal of the ERA-EDTA is education: The series of CME courses combined with the annual congress offer an attractive scientific programme to cover the need for continuous medical education for doctors working in the fields of nephrology, dialysis and transplantation. The association's journals, NDT (Nephrology, Dialysis, Transplantation) and CKJ (Clinical Kidney Journal), are currently the leading nephrology journals in Europe; furthermore NDT-Educational is the Society's online educational journal , with free access for all users, as well as being a very important and useful feature of the NDT-Educational "Literature Review". The ERA-EDTA Registry is a large epidemiologic database comparing countries by assessing nephrology practices throughout Europe. ENP, the European Nephrology Portal, is the latest new initiative of ERA-EDTA, where all those interested in the activities of the Society can find everything that is happening, all in one place. Finally, ERA-EDTA is a member of the European Kidney Health Alliance (EKHA), a consortium of patients, nurses and foundations relating to renal issues that actively interacts with the European Parliament. For more information, please visit www.era-edta.org