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Ultrasonography of vascular access in the hands of nephrology and nephrological nursing professionals in advanced chronic kidney disease units: A tool to improve the quality of care

Ecografía del acceso vascular en manos de los profesionales de la nefrología y de la enfermería nefrológica en las unidades de enfermedad renal crónica avanzada: una herramienta para mejorar la calidad asistencial



Dear Editor,

The success of haemodialysis (HD) as a renal replacement therapy technique depends largely on an adequate vascular access (VA), which may determine the success of a given HD programme.^{1,2} The use of ultrasound in the advanced chronic kidney disease (ACKD) unit,^{3,4} as well as interdisciplinary work,^{5,6} plays an important role in this activity.

Clinical guidelines show a degree of discordance regarding the performance of preoperative vascular mapping and the ultrasound monitoring of arteriovenous fistulas (AVF) in the ACKD stage.^{7–9} The results from our ACKD unit following the introduction of VA ultrasound are presented. Our hypothesis is that performing preoperative vascular mapping and ultrasound follow-up improves quality of care. This is in line with the recommendations of the Spanish Multidisciplinary Vascular Access Group (GEMAV) Clinical Guidelines.⁷

Our unit covers around 430,000 inhabitants with 343 prevalent HD patients. In order to optimise resources and actions to increase the number of incident and prevalent patients with native arteriovenous fistula (nAVF), as well as to reduce their

complications and increase their longevity, in June 2020, our hospital's nephrology department opened a specific VA ultrasound outpatient consult, associated with the ACKD unit, and managed by the same team. Following the incorporation of the VA ultrasound consult, the next step, to improve the management and consequently the outcomes of VA, was the creation of a vascular access programme for haemodialysis, based on the training and implementation of an interdisciplinary team including of nephrologists, nephrology nursing, cardiovascular surgery (CVS) and interventional vascular radiology (IVR), with the assignment of specific functions.

To analyse the impact of launching the programme in June 2020, the number of patients who started HD with AVF was assessed in four periods: two years prior to the creation of the consults facility (2019–2020) and two years after (2021–2022) (Fig. 1). A total of 154 HD incident patients from the ACKD unit were analysed from these periods. The percentages of patients who started HD through AVF were 63.27% ($n=31$), 50% ($n=16$), 74.36% ($n=29$) and 85.29% ($n=29$) in the 1st, 2nd, 3rd, and 4th periods, respectively. The Pearson Chi-square shows that there is a higher expected frequency of fistulas in period 4, while there is a lower frequency than expected in period 2 ($p<0.05$). The current percentage of AVF and CVCs (central venous catheters) in prevalent patients in the HD

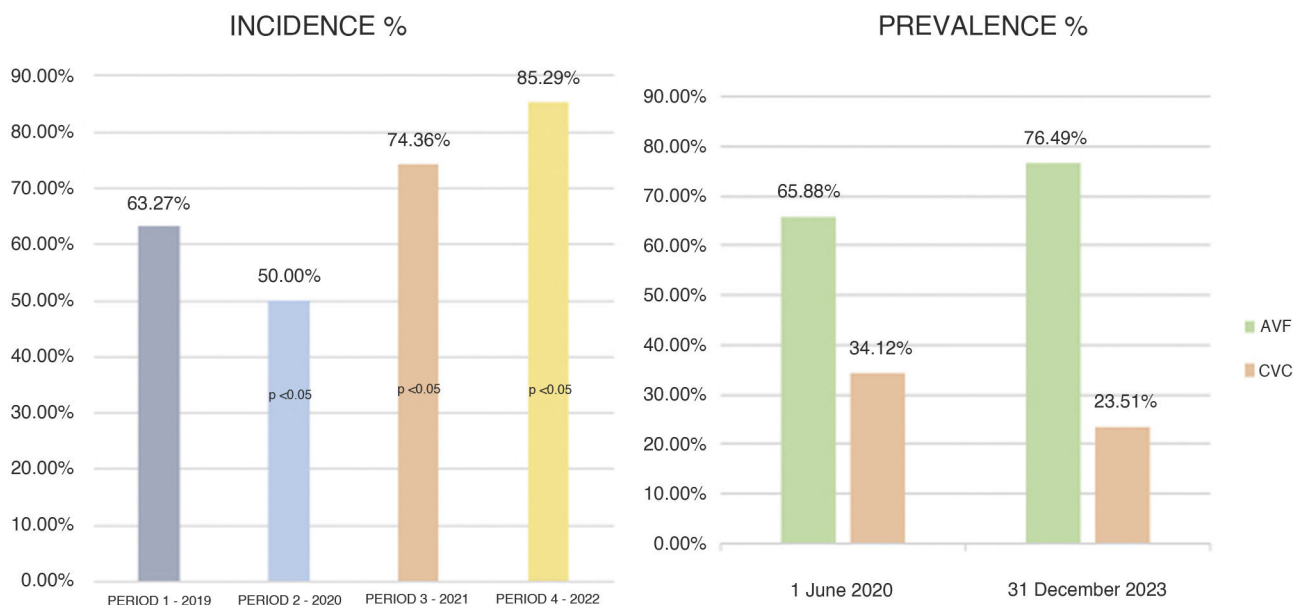


Figure 1 – Incidence and prevalence of AVF after initiation of VA ultrasound consultation.

units of our area as of 31 December 2023 was 76.49% ($n=244$) and 23.51% ($n=75$), respectively. The change in prevalence from 01/06/2020 (start of the VA ultrasound consultation) to 31/12/2023 is shown in Fig. 1. The prevalence of AVF increased from 65.88% ($n=222$) to 76.49% ($n=244$) and the prevalence of catheters fell from 34.12% ($n=115$) to 23.51% ($n=75$).

Our area currently meets the standards established by GEMAV regarding the incidence of patients from the ACKD unit who start HD with AVF, and the prevalence of HD patients with AVF; both are higher than 75%.⁷

The inclusion of VA ultrasound in the ACKD unit provides additional advantages in patient follow-up and in fact other studies have shown results similar to ours.¹⁰ If, after shared decision-making, the patient ultimately opts for HD, a preoperative vascular map is performed, as well as AVF monitoring after its creation in the ACKD stage. If any dysfunction is detected in the AVF, an ultrasound diagnosis is performed and an elective treatment is proposed. If the nephrologist in charge observe progression in the degree of renal function, a preferential preoperative vascular map will be performed in the same ACKD unit to prioritise AVF creation. This optimises the use of time and resources (both physical -the need for another consultation for ultrasound- and in terms of personnel), while successfully implementing comprehensive treatment and increasing patient satisfaction by centralising their care needs in the ACKD team.^{3,6} Based on our results, we can conclude that the use of ultrasound by the nephrologist as the main diagnostic tool in VA has provided a high degree of autonomy and greater control in the management of a vital procedure for HD patients. This, together with the creation of the vascular access programme for haemodialysis, which facilitates a close collaboration with other specialties required to achieve a VA, has resulted in a reduction in the percentage of patients who start HD with an inadequate VA that is not suitable for them. All this has been possible thanks to the

involvement and motivation of the healthcare professionals involved in the program.

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Toward optimization and excellence via a multidisciplinary care model for patients with chronic kidney disease in Spain: The CARABELA-CKD initiative

Hacia la optimización y la excelencia a través de un modelo de atención multidisciplinar a los pacientes con enfermedad renal crónica en España: la iniciativa CARABELA-CKD



Dear Editor,

Despite its significant impact on public health, chronic kidney disease (CKD) is often referred as a silent epidemic due to its low diagnosis rate and the lack of awareness among the global population. The estimated prevalence of CKD in adults in Spain is 15.1%.¹ Several modifiable factors influence the development of CKD, including hypertension, diabetes, obesity, dyslipidemia, smoking, hyperuricemia, and cardiovascular disease.² The increasing prevalence of these major risk factors, along with the progressive aging of the population, are contributing to a significant rise in the CKD burden that will surely continue to grow in the next years.³ According

to data from The Global Kidney Health Atlas 2019, 759 patients per million population receive kidney replacement therapies (KRT) due to the progressive deterioration of renal function over the course of disease.⁴ Indeed, in the last decade the prevalence of advanced CKD requiring KRT has increased by 30%.⁵ In addition to impairing health-related quality of life, CKD imposes a significant economic burden, accounting for more than 3% of all healthcare costs.⁶

The best strategy to reduce mortality and sanitary costs is through effective, standardized and coordinated clinical management of factors potentially related to CKD, with the specific aim of preventing disease progression and achieving early diagnosis and treatment.

Patient-reported outcomes measures (PROM) and patient-reported experience measures (PREM) are increasingly recognized as essential components of comprehensive patient-centered CKD care. These tools allow patients to describe the impact of their disease on their health status, share their experiences, and provide feedback on the quality of care