with tecovirimat instead of the usual 14 days recommended and was discharged from the hospital.

We describe here the first case in our centre of a kidney transplant patient with monkeypox infection, having found no other cases published in the literature to date. In view of the patient's poor clinical progress, treatment with tecovirimat was administered after approval of the application by the AEMPS. Tecovirimat is the drug of choice for the treatment of monkeypox.[2] Despite the lack of clinical trials to determine efficacy in humans, studies in primates have shown increased survival in those who received tecovirimat compared to those who received placebo, even when the drug was administered after the onset of severe complications. The most common side effects are headache, nausea and abdominal pain. It was administered to approximately 360 human volunteers in an extended safety trial, which found an adverse effect profile similar to that of placebo.[3] It cannot be ruled out that tacrolimus levels may decrease, as it acts as an inducer of the CYP3A4 cytochrome, although in our patient's case blood levels remained stable during treatment.

Cidofovir is a second-line drug. Although it has in vitro activity against monkeypox and has been shown to be effective in animal models, there are no clinical data on its efficacy in humans at present and its use may be associated with significant adverse events, such as nephrotoxicity and/or hepatotoxicity.[4] Brincidofovir is a modification which has also shown activity in vitro and in primate trials. Its advantages lie in the fact that it is administered orally and causes less nephrotoxicity.[5]

In the case described here, the patient had a satisfactory clinical outcome with no side effects and no interactions with tacrolimus throughout the treatment.

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Chronic interstitial nephritis in agricultural communities and pre-eclampsia: Is there a link?

Nefritis intersticial crónica en comunidades agrícolas y preeclampsia: ¿existe una relación?

Dear Editor,

Chronic interstitial nephritis in agricultural communities (CINAC) is a chronic tubulointerstitial nephropathy with extrarenal manifestations that cannot be attributed solely to CKD. CINAC typically affect young to middle age male farmworkers but and also women and children living in the same areas.[1] A recent publication suggested that the pathologic abnormalities seen in CINAC may represent a toxin-induced

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Table 1 – Clinical characteristics at specified time points.

Clinical and laboratory data	Pre-eclampsia Admission 3/1/2016	Kidney Biopsy 9/3/2019
Blood pressure (mmHg)	146/100	110/80
BMI (kg/m^2)	–	23.4
Creatinine (0.6–1.3 mg/dL)	1.5	1.4
GFR (mL/min × 1.73 m^2 SC CKD-EPI)	50	53
Proteinuria (urinalysis)	Negative	Negative
Urea nitrogen (7–18 mg/dL)	13	12
Uric acid (2.6–7.20 mg/dL)	11.4	5.2
Glucose (70–115 mg/dL)	75	82
Total cholesterol (<200 mg/dL)	168	173
Triglycerides (35–150 mg/dL)	110	108
Hemoglobin (11.50–18 g/L)	11.9	11.2
Platelets (150–450 10^9 L^{-1})	352	273
Na^+ (135–145 mmol/L)	136	138
K^+ (3.5–5.5 mmol/L)	3.6	3.7
Cl^- (101–111 mmol/L)	101	107
Mg^{++} (1.7–2.2 mg/dL)	6.8	1.8
Ca^{++} (8.4–10.2 mg/dL)	9.5	8.8
24-h urine volume (mL)	1800	1700
Proteinuria in 24 h (<0.015 g)	0.4	0.3
Total protein (6.4–8.3 g/dL)	6.1	–
Albumin (3.4–4.8 g/dL)	2.7	4.4
ALT (10–40 UI/L)	10	12
AST (10–42 UI/L)	22	14
LDH (135–225 UI/L)	146	136
Total bilirubin (0.2–1.2 mg/dL)	0.4	–
Direct bilirubin (0.0–0.5 mg/dL)	0.1	–
Indirect bilirubin (0.2–1.35 mg/dL)	0.3	–
HIV status	Negative	Negative

nephropathy caused by factors that affect calcineurin signaling. Herbicides and insecticides utilized in areas with high rates of CINAC, have documented calcineurin inhibition effects leading to a strikingly similar proximal tubular lesion in this form of nephropathy.[2]

In 2017, El Salvador reported elevated rates of obstetric morbidity (8%), mainly due to pre-eclampsia. One hospital, which serves the eastern region of the country where CINAC is more prevalent, reported much higher rates of obstetric morbidity, 33.8% of births from urban areas and 64.1% of births from rural areas.[3]

We report the case of a 27-year-old healthy woman G1P1A0 with prenatal care for 3 weeks, who presented in 2016 to the national women's hospital at 32-week gestation with a diagnosis of pre-eclampsia. She had no family history of pre-eclampsia or kidney disease. Her past medical history revealed a creatinine of 1.3 mg/dL at age 15 during a community health screening. She was exposed to pesticides while performing farm work from age 9 to 14 years, and had additional ongoing contact with lands irrigated with pesticides, she consumed water from wells until 18 years of age.

During the hospitalization she was diagnosed with severe pre-eclampsia and underwent emergency C-section without complications. A baby girl was delivered without complications, birth weight 2500 g, height 47 cm, head circumference 33 cm. The patient was discharged two days after delivery with a blood pressure of 110/72 mmHg and a serum creatinine of 1.5 mg/dL she was referred to nephrology for further evaluation (Table 1). She continued follow-up every 3 months for 3 years. In 2019, three years post-delivery, she had a persistently elevated creatinine at 1.4 mg/dL. Kidney Ultrasound showed right kidney measurements 10.6 cm × 5.7 cm × 5.9 cm with a cortical thickness of 1.4 cm. The left kidney measured 11.1 cm × 4.2 cm × 4 cm with a cortical thickness of 1.9 cm. There was no echogenicity, cysts, calculi, or masses. Normal bladder.

A kidney biopsy was performed a sample of kidney cortex contained 29 glomeruli, 11 of which were globally sclerotic (Fig. 1). Glomeruli were mildly enlarged and four had severe ischemic-type capillary wall corrugation with segmental deposition of collagen in the urinary spaces. There were no segments of sclerosis, glomerular inflammation, mesangial hypercellularity or crescents. There was 25% tubular atrophy with interstitial fibrosis and a mild associated interstitial lymphocytic infiltrate without neutrophils or eosinophils. Focal atrophic and preserved proximal tubules had epithelial cells with large irregular silver positive cytoplasmic granules. Arteries had mild muscular hypertrophy and mild intimal fibrosis, and arterioles were unremarkable. Immunofluorescence negative. By electron microscopy, glomeruli with wrinkled capillary walls had thickened and corrugated basement membranes with severe podocyte foot process effacement. The glomeruli showed normal basement membranes with 25% podocyte foot process effacement. The cytoplasm of focal proximal tubular cells had clusters of ovals to mildly dysmorphic small lysosomes containing peripheral electron dense aggregates as well as fewer large dysmorphic lysosomes containing dispersed electron dense aggregates. Features consistent with CINAC with mild arterial nephrosclerosis.

CKD is a risk factor for pre-eclampsia but additional risk for pregnancy complications may be seen with specific renal disorders.[5] Pesticide exposure has been associated with hypertensive disorders during pregnancy in the US.[6] Organochlorine pesticides have been identified in the umbilical cord blood of exposed mothers living in Mexico, with higher concentrations associated with longer exposure to environmental contaminants.[4] Toichuev et al. identified a highly significant increase in the relative risk of neonatal and maternal health problems, including pre-eclampsia, with increasing levels of placental organochlorine pesticides in a concentration-dependent manner.[7]

Suggested mechanisms for pesticides causing pre-eclampsia include oxidative stress, endocrine disruption, abnormal placental vascularization and epigenetic changes.[8] In contrast, a recent study by Karunananda did not identify placental abnormalities in postpartum women living in endemic areas in Sri Lanka; however, it is unknown if this is true for women who have CINAC renal lesions with associated impaired eGFR versus those women who just reside in an endemic region.[9]

Other than CKD, this patient had no typical risk factors for pre-eclampsia, such as hypertension, diabetes, obesity, smoking, a family history of pre-eclampsia, advanced maternal age, or multiple pregnancies.[10] She had life-long exposure to agrochemicals and kidney biopsy consistent with CINAC, suggesting related end organ damage. These findings suggest a link between these exposures and hypertensive disorders

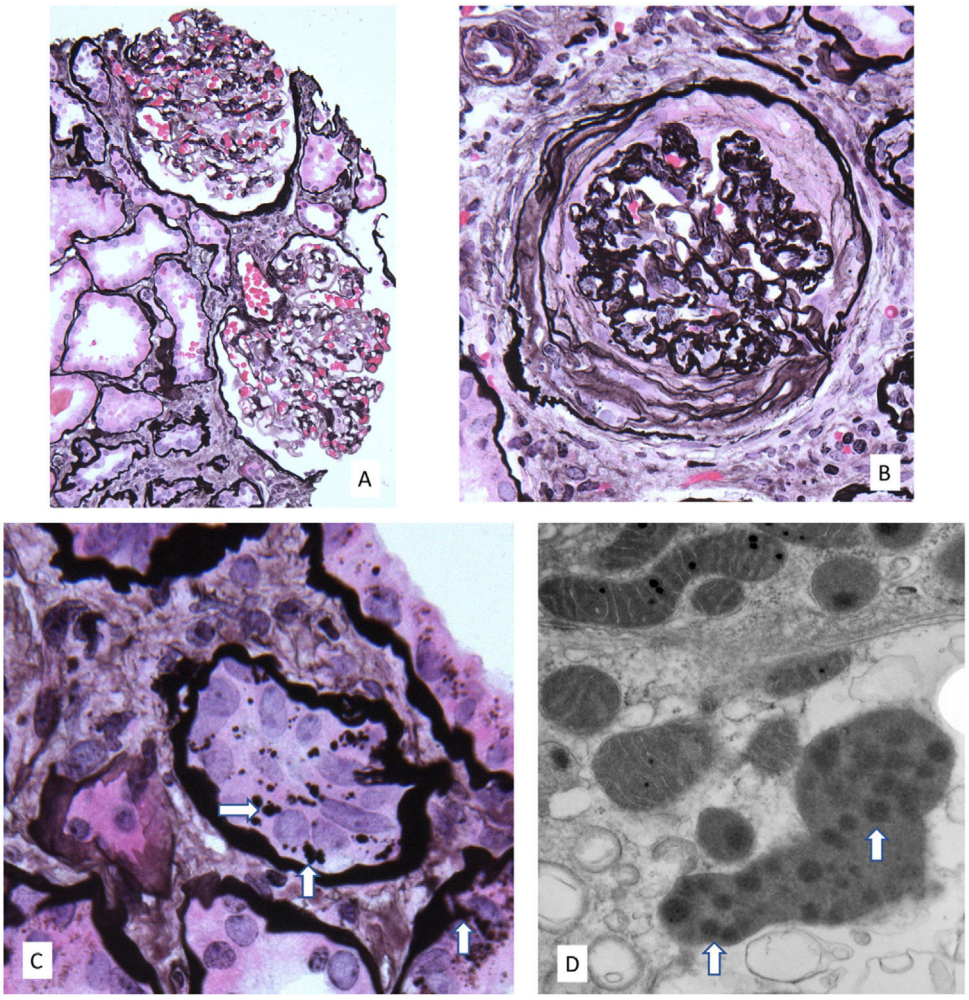

Fig. 1 – (A) Moderately enlarged glomeruli without segmental lesions or hypercellularity. There is focal tubular atrophy with interstitial fibrosis without inflammation (periodic-acid methenamine silver, original 80×). (B) Global ischemic-type capillary wall corrugation and retraction with collagen accumulating in the urinary space. Note the normal arteriole in the upper left (periodic-acid methenamine silver, original 160×). (C) Atrophic proximal tubular cells containing enlarged irregularly shaped silver positive granules (arrows) (periodic-acid methenamine silver, original 240×). (D) Electron microscopy showing an enlarged dysmorphic lysosome containing dispersed electron dense aggregates (arrows) in a medium electron dense matrix within a proximal tubular cell (original 20,000×).

of pregnancy and highlight the need for more extensive and prospective studies.

Conflicts of interest

None.

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Prediction of intraoperative arteriovenous fistula flow using infrared thermal imaging

Predicción del flujo intraoperatorio de fístulas arteriovenosas mediante el uso de imágenes térmicas infrarrojas

Dear Editor,

According to all clinical guidelines, autologous arteriovenous fistula (AVF) in the upper limb is the vascular access of choice for haemodialysis,[1–3] although a high percentage of them (up to 50%) will not mature or be used.[4] For this reason, multiple intraoperative tools have been proposed to try to predict patency and future maturation, with immediate postoperative flow measured by Doppler ultrasound being one of the most useful.[5–9] However, this technique has important limitations; it is operator-dependent and requires dedicated equipment and training. As an alternative method to predict flow and maturation, the use of thermal cameras has been proposed, due to their ease of use, reproducibility and low cost. Thermal cameras could help to change the surgical strategy within the same intraoperative period, and prevent patients from leaving the surgical area with access routes destined to fail.

The aim of our study was to demonstrate a decrease in distal temperature following the creation of an AVF during the immediate postoperative period, and a negative correlation between this temperature change and AVF flow. We conducted a prospective observational study over a six-month period, including patients with stage IV-V chronic kidney disease who were candidates for native AVF creation in our centre, under local anaesthesia and without previous access.

Temperature was measured using a portable thermal camera (Fig. 1) and fistula flow was measured by Doppler ultrasound, pre-operatively and immediately post-op, using the hand on the non-operated side as a control. For the flow calculation we used the formula: Qa (ml/min) = Area in cm^2 ($0.785 \times D^2$, in cm^2) × mean velocity (cm/s) × conversion factor (0.06).[2,3] Univariate analysis was performed using parametric tests; Chi-square and t-test for paired samples for the study of pre-post temperature and flow changes in each arm. The t-test for independent samples was used to compare the relative temperature changes between the two arms.

We included a total of 52 patients, whose characteristics are shown in Table 1. The temperature in the hand on the operated arm decreased by 0.91 °C (±2.34) post-intervention ($p = 0.003$), and the relative change in temperature between the two hands was −1.15 °C ($p = 0.015$). Flow in the proximal humeral artery increased by 621.6 ml/min (±548.5; $p < 0.001$). There was a trend towards higher flow velocity in the AVF at lower postoperative hand temperature. However, this correlation was not statistically significant ($R = -0.117$, $p = 0.418$).

The other variables analysed, including demographics, comorbidities and the characteristics of the fistula performed,

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