

## Conflicto de intereses

Los autores declaran no tener ningún conflicto de intereses.

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## Decision making – Should we perform kidney transplantation on a patient with a positive RT-PCR test for SARS-CoV-2?

### Toma de decisiones - ¿Debería realizarse un trasplante de riñón a un paciente con una prueba RT-PCR positiva para SARS-CoV-2?

Dear Editor:

The COVID-19 pandemic brought new challenges to daily decision-making in Kidney Transplant (KT) Centers. Excluding infection with SARS-CoV-2 virus before patients undergo KT became a routine due to the significant prevalence of asymptomatic infection. According to the Centers for Disease Control and Prevention (CDC), people who recovered from

COVID-19 may have prolonged detection of SARS-CoV-2 RNA, without being at risk of disease transmission. Studies have indicated that patients who were hospitalized and recovered may have detectable SARS-CoV-2 RNA in the upper respiratory tract up to 3 months after symptom onset.<sup>1</sup> In some cases, a KT was already performed after recovery but within this timeframe.<sup>2</sup> Although some cases of intermittent viral shedding have been described up to 4 months after COVID-



19,<sup>3</sup> most series report a median duration of positive test of around 30 days; intermittent shedding after 2 months of symptom onset remains unlikely.<sup>3-5</sup> Reinfection risk seems to be low,<sup>6,7</sup> although reinfection with new variants must be considered.

The role of immunosuppression in COVID-19 severity is not yet fully understood. An active acute infection is generally a contraindication to KT. In a Brazilian KT center, four patients were screened for SARS-CoV-2 infection before KT and a positive result came after surgery.<sup>8</sup> None of these patients developed symptoms.

We present the case of a 35-year-old patient who was admitted at our unit for a second deceased-donor (DD) KT. She had chronic kidney disease of unknown etiology diagnosed in childhood and started hemodialysis in 2005. Her first KT complicated with sepsis, primary graft dysfunction and subsequent graft nephrectomy. She maintained good adherence to hemodialysis with no major complications.

In May 2021 – after 16 years under hemodialysis – she was selected for a second DD-KT, with whom she shared the same blood type and had only 2 *Human Leucocyte Antigen* incompatibilities (B and DR). She was already highly immunized – Panel of *Reactive Antibodies* (PRA) of 44% and virtual PRA based on single antigen specificities of 99.73%. No donor specific antibodies were detected.

On admission she was asymptomatic and there was no clinical, laboratorial or radiographic sign of infection. She presented no contraindication to KT. However, she tested positive for SARS-CoV-2 on a RT-PCR test (*GeneXpert*<sup>®</sup> Ct gene E 39,2, gene N 38,9). The patient's previous history revealed a mild COVID-19 disease four months before. She was unvaccinated due to this recent infection. Antibodies to SARS-CoV-2 virus were positive, consistent with previous infection – anti-nucleocapsid 78 U/ml and anti-Spike 97 U/ml.

After discussion between the KT team and both clinical pathology and infectious disease experts the RT-PCR test was considered a false-positive due to intermittent viral shedding and the patient was accepted for KT. High-risk immunosuppression protocol with thymoglobulin 1.25 mg/kg daily for 7 days, mycophenolate mofetil 2 g daily and high dose steroids were necessary due to her increased allosensitization. Mycophenolate mofetil dose was reduced due to cytopenias, no dose reduction was made to other immunosuppressants. Maintenance immunosuppression included tacrolimus, mycophenolate mofetil and prednisolone.

There were no signs of respiratory infection in the post-operative period. Subsequent RT-PCR tests for SARS-CoV-2 were performed at day 8, 13 and 18 after surgery and all came negative. Antibodies titers were not repeated subsequently. The patient has currently 9 months of KT.

The risks and benefits of KT in this case were thoroughly balanced. A false-positive result was suspected due to recent infection and elevated number of PCR cycles needed to amplify viral RNA. In a young highly immunized patient under hemodialysis for 16 years it could take long before she was again selected for transplantation. However, fragile patient under immunosuppression and mild symptoms from previous COVID-19 could have been unable to build robust immune protection for a second infection with SARS-CoV-2 and the

risks of inducing immunosuppression on a patient with active COVID-19 infection could be catastrophic.

High Ct values have been frequently associated with viral shedding conditions and when interpreted with caution and integrated with other clinical signs may help some decision making, as in the present case.<sup>9</sup>

Urgent liver transplantation has been performed in a patient with acute liver failure, a positive RT-PCR test for SARS-CoV-2 but no respiratory symptoms.<sup>10</sup>

To our present knowledge, there is no report of a KT team deciding to perform kidney transplantation on a patient knowing he has positive RT-PCR test for SARS-CoV-2 more than 3 months after diagnosis of COVID-19. This is also the first KT on a patient with positive RT-PCR test for SARS-CoV-2 in a Portuguese transplant center.

As the number of hemodialysis patients recovering from COVID-19 grows, it is expected that this situation repeats. Kidney transplant teams should have quick access to infectious disease experts who would guide the interpretation of these screening tests in the future and help the decision to admit patients for transplant and immunosuppression.

## Conflict of interest

There is no conflict of interest among all authors of this letter.

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## Hemodiafiltración online sin reposición de calcio utilizando citrato como anticoagulante y líquido de diálisis con 3,5 mEq de calcio posdilucional en pacientes con trombocitopenia inducida por heparina: reporte de 2 casos

### Online hemodiafiltration without calcium replacement using citrate as an anticoagulant and dialysis fluid with 3.5 mEq of post dilutional calcium in patients with heparin-induced thrombocytopenia: Report of 2 cases

Sr. Director,

Los pacientes con enfermedad renal en terapia de reemplazo renal con hemodiálisis requieren de anticoagulación del sistema extracorpóreo, siendo la heparina lo más utilizado.

La trombocitopenia inducida por heparina (TIH) es una condición grave que ocurre en pacientes expuestos a heparina, independientemente de la dosis y vía de administración, reportándose una prevalencia cercana al 5%<sup>1-2</sup>.

Esta condición se genera por el desarrollo de autoanticuerpos contra el factor plaquetario endógeno 4 (PF4), que genera activación plaquetaria produciendo trombosis arteriales y venosas en algunos casos graves<sup>3</sup>.

Existen 2 clases de TIH: la tipo I sin descenso significativo del recuento plaquetario ni trombosis; y la tipo II donde existe trombocitopenia con trombosis, requiriendo la suspensión de la heparina y el uso de otro anticoagulante para tratar la trombosis.

La presentación de TIH en pacientes en hemodiálisis genera buscar alternativas para la anticoagulación, como el uso de HDF predilucional, infusión continua de solución salina, uso de citrato como anticoagulante, incluso cambiar de modalidad a diálisis peritoneal.

La prevalencia de TIH en los pacientes que realizan hemodiálisis puede ser de hasta el 4%, aunque la presencia de anticuerpos contra PF4 es mayor en los pacientes en diálisis<sup>4-6</sup>.

El uso del citrato como anticoagulante es una práctica común en las terapias continuas de reemplazo renal y exige el uso de la reposición de calcio<sup>7</sup>. Existen reportes aislados del uso de citrato sin reposición de calcio en diálisis extendidas en pacientes con IRA<sup>8</sup>.

La hemodiafiltración online es una modalidad hemodialítica en amplio crecimiento en pacientes con ERC. Se presentan 2 casos clínicos de pacientes con ERC en hemodiálisis crónica con antecedente de TIH, con el uso del citrato como anticoagulante implementado durante hemodiafiltración online, sin reposición de calcio.

#### Caso A

Paciente masculino de 68 años, con diagnóstico de glomerulonefritis pauciinmune ANCA-p positivo. Con el uso progresivo de heparina sódica durante las sesiones de diálisis presentó disminución del recuento de plaquetas (*fig. 1*) con anti-PF4 positivos, por lo que suspendió la heparina, iniciando citrato como anticoagulante para continuar la hemodiálisis crónica.