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Jejunal perforation associated with immune reconstitution inflammatory syndrome due to cytomegalovirus: A case report

Perforación en yeyuno asociada a síndrome inflamatorio de reconstitución inmunologica por citomegalovirus: reporte de un caso

Gastrointestinal infection due to cytomegalovirus (CMV) in patients with HIV has not been frequently reported. Its main presentation is perforation at the level of the colon, ileum, and appendix.[1] Therefore, the aim of this work was to present a case of intestinal perforation at the level of the jejunum due to CMV during antiretroviral treatment (ART), as part of immune reconstitution inflammatory syndrome (IRIS).

A 48-year-old man had a past medical history of HIV infection. At the time of diagnosis, he presented with a viral load of 100,000 copies with a count of 47 CD4+ cells, signifying stage C3 disease.

The patient's illness began in November 2021. He presented with asthenia, adynamia, and a productive cough that caused vomiting and dyspnea, but no cyanosis. Symptomatology had persisted for 21 days. He also had dyspnea after small and medium exertion and polypnea. Fourteen days after symptom onset, he presented with blood in sputum and a rise in body temperature accompanied by chills, piloerection, and diaphoresis, for which he sought medical attention at the emergency service of our hospital. The patient was evaluated and admitted to the internal medicine service on November 11, 2021, diagnosed with pneumonia in an immunocompromised patient. ART was started with tenofovir/emtricitabine (1 tablet of lopinavir/ritonavir every 24 hours and 2 tablets every 12 hours, together with trimethoprim-sulfamethoxazole and ceftriaxone). About two weeks after starting treatment, the patient began to have colicky abdominal pain located in the left iliac fossa, with intermittent intensity of 7/10, accompanied by nausea but no vomiting. Physical examination revealed abdominal pain and a soft abdomen upon palpation, rebound tenderness, and abdominal wall rigidity. A chest x-ray showed subdiaphragmatic free air. Pneumoperitoneum was identified in the supramesocolic recesses, predominantly in the right subdiaphragmatic region, with data of intestinal obstruction due to dilation of the stomach. He also presented with segments of the small intestine measuring up to 49 mm and intestinal pneumatosis, and a transition zone at the level of the distal ileum was observed.

The laboratory work-up reported leukocytes $7.1 \times 10^3/\mu L$, hemoglobin 12.4 g/dL, hematocrit 36.7%, platelets $445.0 \times 10^3/\mu L$, neutrophils 95%, absolute neutrophils $6.7 \times 10^3/\mu L$, lymphocytes 4.3%, absolute lymphocytes 0.31, CD4 0.68%, and absolute CD4 6.10 cells/μL.

The patient was taken to the operating room, where 100 mL of intestinal fluid was drained, and perforation at the level of the jejunum, 60 cm from the angle of Treitz in 30% of its lumen, was identified. Friable circular lesions also occupied 20% of the intestinal lumen at 100 cm from the angle of Treitz (Fig. 1). Primary closure was carried out with PDS 4.0 on two planes and samples of the edges of the intestinal perforation were sent to the pathology service of the hospital.

The pathologic analysis identified an extensive cytopathic effect in endothelial cells and macrophages, characteristic of CMV infection that was confirmed through immunohistochemistry and a PCR test (Fig. 2). Treatment was started with ganciclovir for 14 days. The patient had adequate clinical progression and was released in 30 days.

Intestinal perforations due to IRIS associated with CMV infection are not often reported. It affects immunodepressed patients, particularly those with CD4 levels below 50 cells/mm^3, which can cause ulceration, enterocolitis, ischemia, and perforation.[2–7] To the best of our knowledge, the case presented herein is the first to be reported in Mexico. At the time of this writing, only three cases of perforation at the level of the jejunum, including this one, have been reported.[4,5]

Figure 1 Jejunal perforation 60 cm from the angle of Treitz.

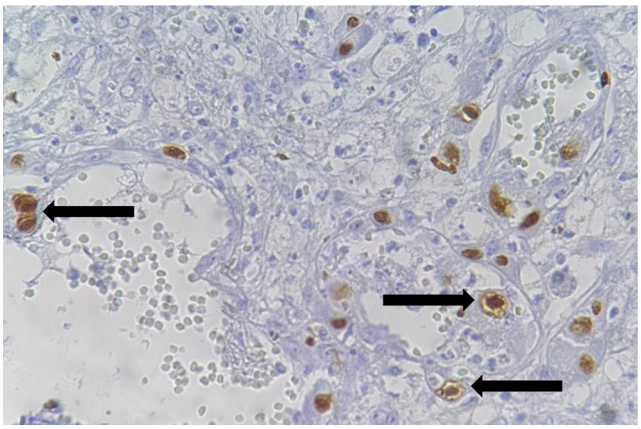

Figure 2 Immunohistochemistry (×20). Nuclear inclusions with a perinuclear halo, characteristic of CMV (arrows).

The most common symptomatology in this kind of disease is fever, abdominal pain, and diarrhea, and its presentation can sometimes be asymptomatic. Our patient also presented with pneumonia, further compromising his recovery. Nevertheless, he improved with the treatment with ganciclovir for 14 days, and so was released from our hospital.

The pathogenesis caused by CMV is believed to occur due to submucosal vasculitis in conjunction with thrombosis, resulting in ischemia, ulcers, and intestinal wall thinning, which can cause its later perforation and gangrene.[8] Thus, CMV-induced gastrointestinal perforation together with IRIS can be considered, especially in persons with HIV infection during ART.[3]

As part of the treatment of our patient, we decided on primary closure of the lesion due to its size and closeness to the angle of Treitz. The patient's postoperative progression during the three months of follow-up was favorable.

It is important to consider IRIS as a cause of the complication of acute abdomen in patients with AIDS, after starting antiretroviral therapy, especially in those with a very low baseline CD4 count. Therefore, starting ART early and maintaining a high CD4+ T cell count is necessary.

Ethical considerations

The authors declare that this case report contains no personal information that can identify the patient, and so informed consent was not required. Nevertheless, informed consent was obtained for the publication of the present work. In addition, this case report meets the current bioethics research regulations and did not need to be authorized by the institutional ethics committee because it did not affect the patient's health.

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Author contributions

All authors have read the manuscript and agree with the version to be published.

Conflict of interest

The authors declare that there is no conflict of interest.

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A general view of liver transplantation in Mexico

Una visión general del trasplante hepático en México

Cirrhosis of the liver (CL) is a worldwide public health problem, conditioning more than two million deaths annually.[1] The only curative treatment for advanced-stage disease is liver transplantation (LT). Today, through improvements in surgical technique and immunosuppression, overall five-year survival surpasses 75%.[2]

In Latin America, only 18 of the 33 countries perform LT, and annual rates are significantly lower than those of developed countries. Brazil is an exception; not only does its annual LT rate surpass those of its neighboring countries, but it is also one of the three countries worldwide that performs the most transplants. In contrast, Mexico is one of the countries with the lowest LT rates in Latin America and the world, with a rate of 1.8 per one million inhabitants/year,[3] despite the fact that, according to the *Instituto Nacional de Estadística, Geografía e Informática* (*INEGI*), CL was the fourth cause of death in 2023 in Mexico.[4]

In the decade from 2014 to 2023, the annual LT rate never included more than 300 LTs, as reported by the *Centro Nacional de Trasplantes* (*CENATRA*) (Fig. 1). In a country of 126 million inhabitants,[5] this underscores the current insufficiency in the number of LTs performed. Historically, 2023 was the year in which more LTs were carried out in Mexico, with a total of 297. Of those LTs, 275 (92.5%) were from cadaveric donors (donors after brain death) and only 22 (7.5%) were from living donors. Importantly, of the total number of procedures performed in that year, 80.5% were carried out at public institutions (Table 1).[6]

LT recipient outcomes in Mexico are similar to those of other countries,[7] but despite the economic and survival benefits of LT, compared with the care of the natural history of the disease,[8] the number of patients on the national waitlist is not proportional to the magnitude of the problem. This may be secondary to a deficit in the rate of referrals to a transplantation center by the treating medical personnel due to either a lack of awareness about the benefits to the patient and healthcare system or to misinformation regarding the referral process. This is reflected in the number of transplant centers that are not utilized in the country. According to the *CENATRA*, there are fewer than 84 authorized transplantation centers. However, in 2023, only eight institutions carried out over 10 transplants per year, the majority of which were centers located in the largest cities of the country, such as Mexico City (68.3%), Monterrey (14.8%), and Guadalajara (14%), among others (Table 1).[6]

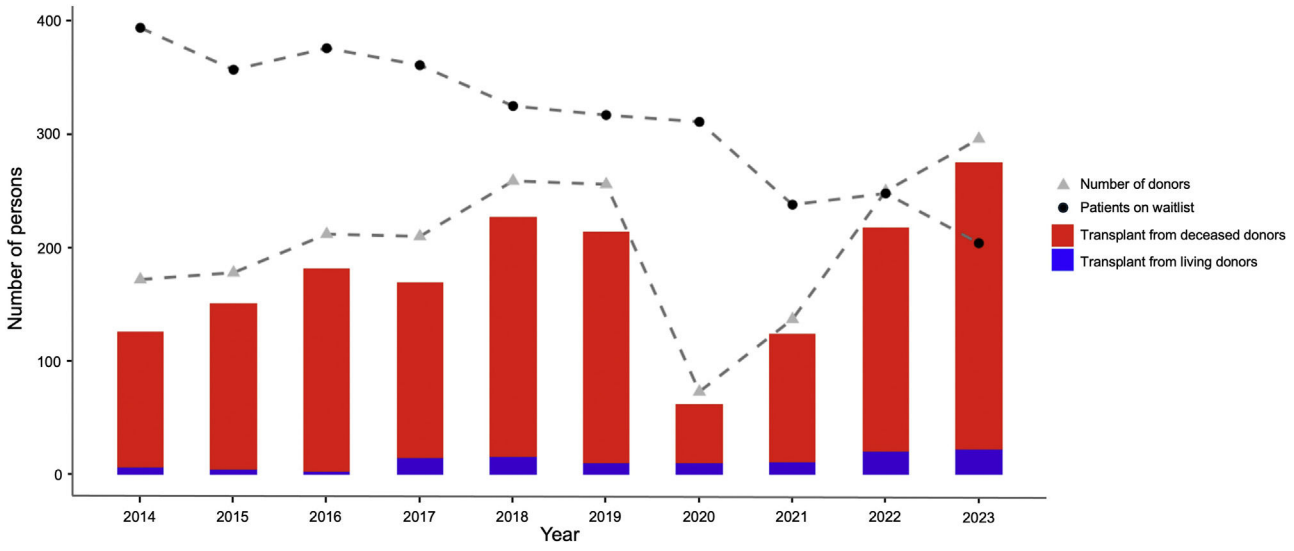

Figure 1 Number of liver transplants in Mexico from 2014 to 2023.