Case Report

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Occult Cytomegalovirus Cholangitis and Pancreatic Adenocarcinoma: A Case Report

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Abstract

A rare case of occult cytomegalovirus (CMV) cholangitis along with an updated literature review is presented. The patient had not undergone solid organ–bone marrow transplantation and had no chronic autoimmune biliary tract disorder or obvious immunodeficiency.The patient had underwent a pyloric-sparing duodenocephalopancreasectomy, and the postoperative histopathologic examination revealed multiple ulcerative lesions and an occult CMV infection. The copy number of CMV DNA was high (38,000 copies/μg DNA) in common bile duct surgical specimens measured by real-time quantitative polymerase chain reaction. CMV was not detected in blood and urine samples from the patient after full doses of intravenous ganciclovir and full doses of oral valganciclovir antiviral therapy. This report recapitulates the role of CMV in causing severe cholangiopathy in the absence of obvious immunosuppression or autoimmune disorder of the biliary tract.

Keywords: Cholangitis; Bile cytomegalovirus-DNA detection; Biliary complications; Cytomegalovirus

1. Introduction

Cytomegalovirus (CMV) infection of the common bile duct is very infrequent and involves deeply immunocompromised hosts, such as those with HIV infections, primary immunodeficiencies, or autoimmune biliary or pancreatic duct diseases (eg, primary sclerosing cholangitis) or those receiving immunosuppressants after any type of transplantation.[1–3] Cytomegalovirus cholangiopathy in immunocompetent individuals have been rarely reported.[4,5] In a case report published in 2005, a 55-year-old man with a history of essential hypertension and diabetes mellitus was hospitalized because of jaundice and liver dysfunction.[4] He was diagnosed with acute CMV cholangitis and pancreatitis. In a report in 2021, a 37-year-old man with jaundice, upper right quadrant pain, and intermittent fever with chills presented with acute cholangitis.[5] He was positive for both immunoglobulin M (IgM) and IgG CMV antibodies, CMV pp65 antigen, and CMV DNA.

We present a rare case of occult cholangitis caused by a CMV infection in a patient with pancreatic adenocarcinoma. The coexistence of a neoplastic infiltration and an ulcerative reaction characterized by CMV inclusions was revealed.

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2. Case presentation

A 77-year-old man with ischemic cardiomyopathy was admitted to the "Annunziata" Hub Hospital in Cosenza, Italy, in January 2020. He had recently undergone pylorus-sparing duodenocephalopancreasectomy, with *en bloc* removal of the head of the pancreas, intrapancreatic bile duct, duodenum, first jejunal loop, and gallbladder, for stage 2B (T3 N1 M0) poorly differentiated pancreatic adenocarcinoma. Postoperative histopathologic examination revealed multiple ulcerative lesions and an occult CMV infection. The patient was HIV-negative and had never been treated with immunosuppressive drugs. However, we hypothesized that pancreatic neoplasia involving the intrahepatic bile ducts caused chronic inflammation, followed by immunodeficiency-induced changes in immune reactivity favorable to CMV infestation in the common bile duct.

Laboratory examinations at admission showed normal levels of inflammatory markers, peripheral T and B lymphocytes, and serum immunoglobulins. Blood samples had no detectable CMV IgM antibody, CMV pp65 antigen, or CMV DNA, whereas common bile duct surgical specimens had high copy numbers of CMV DNA (38,000 copies/μg DNA), as detected via quantitative real-time polymerase chain reaction. The patient's health history was unremarkable up to the time of the previous surgery for pancreatic cancer, except for the violent biliary colic that justified his hospitalization. No clinical symptoms indicative of biliary CMV disease were observed; however, a comprehensive antiviral treatment was indicated owing to the need for antineoplastic chemotherapy. Full-dose intravenous ganciclovir (5 mg/kg twice daily) was administered for 7 days, followed by full-dose oral valganciclovir (900 mg twice daily) for 2 further weeks. Posttreatment polymerase chain reaction showed no CMV in the blood or urine.

After retrograde cholangiopancreatography and administration of a hypercaloric-hyperproteic diet, the patient was transferred to the Oncology Department for adjuvant chemotherapy. There was no evidence of CMV-related disease during the 12-month follow-up period.

A signed informed consent for publication of the patient's clinical information in the journal was obtained, and this article is in accordance with the institution's ethics committee.

3. Discussion

Cytomegalovirus affects the liver in infants and has been associated with biliary atresia and other cholestatic conditions.[1,2] Cytomegalovirus infection of the biliary tract may be life-threatening in liver transplant recipients as it increases the risk of chronic rejection and biliary complications.[1,2]

In many instances, CMV infection significantly predicts poor outcome in biliary atresia, regardless of its primary cause.[1,2]

Differential diagnosis of CMV cholangitis is difficult in severely immunocompromised hosts with locoregional post–liver transplant complications, primary biliary cirrhosis, sclerosing cholangitis, or opportunistic infections and their sequelae. Clinically symptomatic CMV cholangitis is rare in immunocompetent individuals.

To our knowledge, there is rare published analysis evaluating the extent of CMV infection in the biliary tract in patients with pancreatic and/or hepatobiliary neoplastic diseases. Diagnosing CMV cholangitis is undoubtedly more difficult than is diagnosing CMV in the gastrointestinal tract. Moreover, screening of CMV DNA in the biliary tract is not routinely performed in these patients' biliary tract diseases, especially those with neoplastic diseases or awaiting liver transplantation whose CMV serology, CMV DNA, and CMV pp65 results are negative. Doing so would aid the diagnosis of an occult CMV infection in the biliary tract, which is considered a potential contributory cause of cholestatic biliary complications after orthotopic liver transplantation [6,7] or immunosuppressive antineoplastic therapy.

In conclusion, we recapitulated the role of CMV in causing severe cholangiopathy in the absence of obvious immunosuppression or autoimmune disorder of the biliary tract. If promptly identified, CMV infections in the biliary tract can be successfully treated via antiviral therapy, thereby greatly reducing the risk of subsequent infectious complications.

Data Availability Statement

The data sets generated and/or analyzed during the current study are available from the corresponding on reasonable request.

Author Contributions

All authors have participated sufficiently in the intellectual content, the analysis of data, and the writing of the manuscript to take public responsibility for it. Each author has reviewed the manuscript, believes it represents valid work, and approves it for submission.

Conflicts of Interest

None.

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