Clinical Course and Diagnostic Challenge of Jamestown Canyon Virus Infection in Post Liver Transplant Recipient With Altered Mental Status

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Introduction

- Jamestown Canyon Virus (JCV) is an increasingly recognized mosquito-transmitted arbovirus found in North America, most prevalent in April-September. Infection ranges from asymptomatic to rarely neuroinvasive disease. Although mortality rates are low, morbidity can be prolonged and diagnosis is challenging.
- Our case describes a liver transplant (LT) recipient with prolonged altered mental status (AMS) secondary to JCV encephalitis.

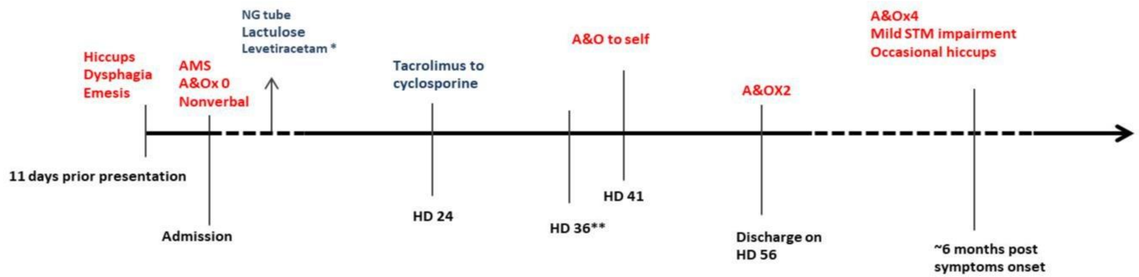
Case Description

- A 72-year-old man from New Hampshire who had a LT for cryptogenic cirrhosis 2 years prior to presentation, on tacrolimus and mycophenolate mofetil for immunosuppression, presented with new, nonspecific neurological symptoms: hiccups, oropharyngeal dysphagia, AMS, and intermittent non-rhythmic twitching of facial muscles and legs (Fig 1).
- On admission, he had stable vitals and was alert, but disoriented, aphasic, and not following commands. He moved all extremities spontaneously with no focal motor neurological deficit. CBC, BMP, LFTs, brain MRI, and initial CSF analysis were normal (Table 1). Extensive viral, bacterial and fungal tests were negative on multiple occasions.
- There was no significant improvement with treatment for possible seizures, hepatic encephalopathy, or with switching tacrolimus to cyclosporine.
- After 1 month, new fever prompted repeat CSF analysis. CSF was notable for lymphocytic pleocytosis. Serum and CSF samples were sent to the State Public Health Laboratory for further testing. Mental status gradually improved. After discharge, serum JCV plaque reduction neutralization titer (PRNT) resulted positive at 1:640 consistent with recent infection. CSF JCV IgM capture ELISA and PRNT were negative.
- By six months after presentation, the patient had returned baseline except for mildly impaired short-term memory, fatigue, and occasional hiccups.

Discussion

- JCV encephalitis may cause prolonged AMS in LT recipients.
- Diagnosis in LT recipients can be challenging. Symptoms may be attributed to other causes like immunosuppressant side effects.
- Diagnosis is based on exclusion of other etiologies and positive JCV serology.
- To our knowledge, this case is the first to describe the natural progression of JCV infection in a LT recipient. Although Intravenous immunoglobulin was previously used in another LT recipient with JCV, there remains no proven treatment for JCV [1].

Figure 1

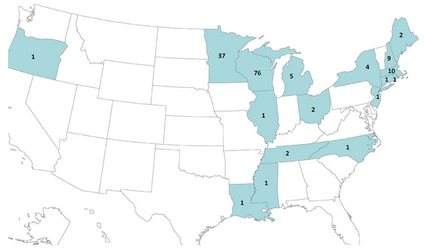


Timeline of JCV-specific testing and treatment over disease course. Abbreviations: A&O, alert and oriented; HD, hospital day; JCV, Jamestown Canyon virus; STM, short term memory. *Discontinued on HD 30, ** JCV testing performed and resulted after 2 months.

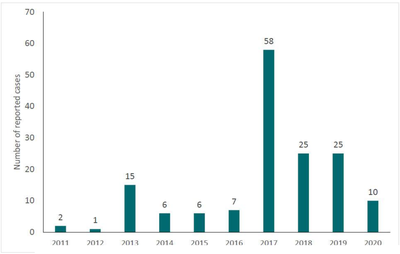
Table 1: CSF analysis data of test tube #4

Hospital day (HD)	Protein (15-45 mg/dL)	Glucose (40 to 70 mg/dL)	White Blood Cell count (<10 cells/uL)	Differentials %
HD 7	117	84	4	Not available
HD 33	118	100	26	Lymphocytes 92%, Monocytes 8% , Neutrophils 0%

CDC Statistics



JCV neuroinvasive disease cases by state of residence, 2011–2020



JCV neuroinvasive disease cases by year, 2011–2020

References

- [1] Ciccone et al. Encephalitis Caused by Jamestown Canyon Virus in a Liver Transplant Patient, North Carolina, USA, 2017, Open Forum Infectious Diseases, Volume 9, Issue 3, March 2022
- CDC website: https://www.cdc.gov/jamestown-canyon/statistics/index.html