Detection of Polyomavirus BK and Polyomavirus JC in Urine Specimens by Real-Time PCR

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INTRODUCTION

The Polyomavirus BK and JC can double-stranded DNA viruses belonging to the Poxviridae family. The infections are acquired early in childhood and 60-80% of adults in the United States have serological evidence of prior exposure. The Polyomavirus BK infection often persist latent infections in a host without causing symptoms, but may produce infection in a host who is immunocompromised or the recipient of immunosuppressive therapy.

Primary infection of Polyomavirus BK generally occurs in childhood without evident symptoms and the virus can remain latent in the host. Reactivation may result from immunosuppression caused by immunosuppressive conditions such as those induced in hospitalized patients. Reactivation increases the risk of neurological complications in these patients. Clinical evaluations are not available; no identifiable patient characteristics are associated with systemic infections. Both procedures were highly sensitive and specific.

RESULTS

The Polyomavirus BK and JC real-time PCR was able to detect template at concentrations ranging from 10^-3 to 10 genome equivalents/reaction. In addition to verifying that the primers and probes did not have homology to sequences deposited in the databases, the specificity scores were calculated for Polyomavirus BK and Polyomavirus JC by the real-time PCR assays (Table 2).

DISCUSSION

Two viruses associated with renal tract infections are Polyomavirus BK and Polyomavirus JC. Undiagnosed and untreated infections with these pathogens can cause complicated medical conditions, such as nephropathies. Such conditions tend to present in immunocompromised individuals as progressive renal insufficiency, nephrolithiasis, or both. Reactivation increases the risk of neurological complications in these patients. Clinical evaluations are not available; no identifiable patient characteristics are associated with systemic infections. Both procedures were highly sensitive and specific.

The present poster describes the development of two real-time PCR assays capable of detecting Polyomavirus BK and JC in urine specimens.

MATERIALS & METHODS

Primary infection of Polyomavirus BK generally occurs in childhood without evident symptoms and the virus can remain latent in the host. Reactivation may result from immunosuppression caused by immunosuppressive conditions such as those induced in hospitalized patients. Reactivation increases the risk of neurological complications in these patients. Clinical evaluations are not available; no identifiable patient characteristics are associated with systemic infections. Both procedures were highly sensitive and specific.

REFERENCES


SUPPORTING INFORMATION

- Table 1: Specificity and Sensitivity of Real-Time PCR Assays for Polyomavirus BK and JC
- Figure 1: Detection of Polyomavirus BK and JC in Urine Specimens by Real-Time PCR
- Figure 2: Comparison of Real-Time PCR Assays for Polyomavirus BK and JC
- Figure 3: Pyrosequencing Results for Polyomavirus BK and JC

This poster describes the development of two real-time PCR assays capable of detecting Polyomavirus BK and JC in urine specimens.