Congenital CMV Infection Screening in Newborns by Saliva Polymerase Chain Reaction Analysis

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Introduction

Congenital cytomegalovirus (CMV) infection is the most common congenital infection, but there are difficulties in diagnosing. Although screening of congenital CMV infection with PCR studies in blood, urine and saliva samples has been developed in recent years, routine CMV screening is not performed in many countries.

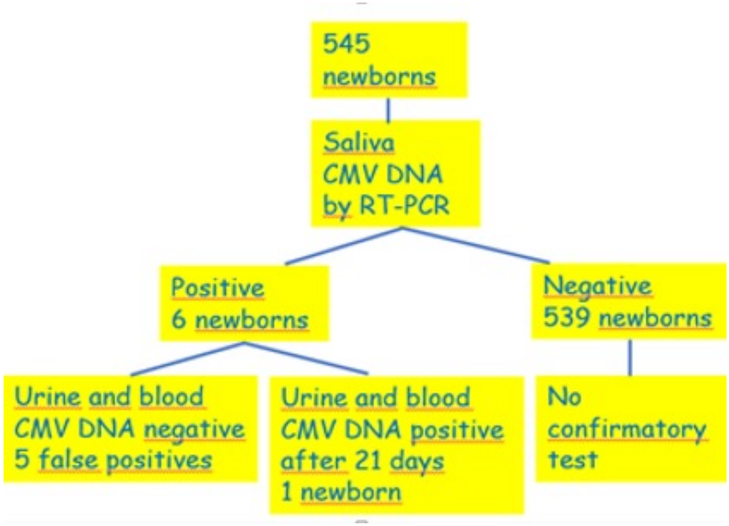
Material and Methods

In our study, CMV DNA analysis was performed in saliva samples by RT-PCR method during the first day following birth in neonates born in a university hospital between January 2021 and January 2022. Saliva samples were taken from all newborns with a swab before the first feeding was performed in the room where the birth took place. The saliva sample was delivered to the laboratory with cold chain within 12 hours in viral transport medium. DNA was isolated from each saliva sample and the presence of CMV DNA was investigated by RT-PCR method.

The presence of CMV DNA was investigated in urine and blood samples in the first 15 days of newborns with CMV-DNA positivity in their saliva sample, and serum CMV-IgM and CMV-IgG levels were also checked in these newborns. Cases with CMV DNA positivity in their saliva but negative urine and blood samples were accepted as false positives.

Results

CMV DNA was investigated in saliva samples of 545 neonates by RT-PCR method in a one-year period and positivity was found in 6 neonates. Since CMV DNA was found negative by RT-PCR method in urine and blood samples of 5 of these neonates, the positivity in the saliva sample was interpreted as false positivity. In one case, CMV DNA positivity and serum CMV-IgM positivity were detected in urine and blood samples 5 weeks later, and acquired CMV infection could not be excluded. As a result, the presence of congenital CMV infection could not be demonstrated in any of the 545 neonates.



Discussion

The absence of any newborn diagnosed with proven congenital CMV infection in our study sample indicates that the frequency of congenital CMV infection is low in our country. It has been observed that the study of saliva PCR CMV DNA by PCR method is not an appropriate screening method due to high false-positive rates when applied alone and must be used together with other supportive diagnostic tests.