



Results of a Protocol for Targeted Testing of Congenital Cytomegalovirus Infection in Babies who Fail the Newborn Hearing Screen

PUBLISHED ABSTRACT

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ABSTRACT

Background and objectives: Cytomegalovirus (CMV) is a major cause of sensorineural hearing loss in children [1]. Universal screening is controversial due to the low risk of CMV-related hearing loss [2]. The prevalence of CMV related hearing loss is 0.5 in 1000 children and is thought to be responsible for 15% to 20% of moderate-to-severe hearing loss in children [3, 4]. Since 2018, New York state law requires targeted CMV testing for newborns who “refer” on the Newborn Hearing Screen (NBHS) prior to discharge from the hospital at birth [5]. This is a report of a CMV testing protocol implemented at a community hospital for newborns who “refer” on the NBHS.

Methods: Clinical records of all neonates born at BronxCare Health System (BCHS) who did not pass the NBHS between March 2019 and September 2020 were retrospectively reviewed. All newborns are screened using Auditory Brainstem Response (ABR) and those who do not pass are referred for audiology evaluation. Newborns who failed NBHS were tested for CMV prior to hospital discharge using Salivary Real-time Polymerase Chain Reaction (PCR) (Quest Diagnostics). Positive results were confirmed with serum PCR. We analyzed NBHS, audiology evaluation and CMV testing results.

Results: A total of 3555 newborns had NBHS performed; 44 did not pass and were referred for audiology evaluation within 2 weeks of hospital discharge. Of these 44, CMV testing was done for 37 (84%) while 7 (16%) were not tested for CMV. Of those tested, salivary PCR detected CMV in two patients: the first had negative confirmatory serum PCR test; the second was confirmed positive and treated with ganciclovir. This patient, who is confirmed positive, had inconclusive results on follow-up audiology evaluation and was referred for Early Intervention services.

Of the original cohort of 44 patients who were referred to audiology; thirty-three (75%) passed audiology evaluation and eleven did not. Of these eleven, two cases

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were followed successfully and have confirmed hearing loss, while 9 were lost to subsequent audiology follow-up. Of the two hearing loss cases; one was the confirmed CMV positive baby who started treatment with valganciclovir, while the other was CMV negative. Of the nine newborns who were lost to audiology follow up, 8 were tested negative for CMV while one baby was not tested for CMV.

Conclusion: At BCHS, the prevalence of CMV related hearing loss is 0.28/1000 as compared to the reported prevalence of 0.5/1000. Eighteen months of targeted CMV testing in newborns who did not pass the NBHS found only one confirmed case of congenital CMV infection. This suggests that targeted CMV screening based on NBHS results misses some cases of congenital CMV infection.

Of the eligible newborns who failed NBHS; seven were not tested for CMV. The testing protocol will need further refinement to avoid missing patients in the future.

COMPETING INTERESTS

The authors have no competing interests to declare.

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