CPSP
CANADIAN PAEDIATRIC SURVEILLANCE PROGRAM

One-time survey results

Congenital cytomegalovirus infection – Post-study survey

February 2009

From March 1, 2005 to February 28, 2008, the CPSP conducted surveillance for congenital cytomegalovirus (cCMV) infection. One of the educational goals of this surveillance was to increase Canadian paediatricians' awareness of the most effective way to make a cCMV diagnosis. Cytomegalovirus (CMV) serology in the newborn is a poor way of identifying congenital infection. Although the presence of IgM is very specific for fetal and newborn infection because IgM does not cross the placenta from the maternal circulation and, hence, indicates fetal infection, it is not very sensitive. Congenital CMV infection usually begins early in gestation, particularly when it results in significant symptomatic sequelae. The fetus does not mount a significant immune response and, in fact, develops immune tolerance for the virus. Isolation of the virus or detecting viral DNA by polymerase chain reaction (PCR) is a very sensitive and specific method of making the diagnosis. Because of the overwhelming fetal infection with minimal immune response, there are massive quantities of virus being excreted in the urine and saliva. Viral isolation must occur during the first three weeks of life, as isolation beyond that age may indicate acquired infection (from breast milk or other community sources) and is not definitive for the diagnosis of congenital infection.

Before launching the study, participants were surveyed to assess their knowledge about the most effective way to confirm the diagnosis. Pre-study results were collated and reported as part of an educational highlights article at the start of the surveillance in March 2005.[1] As the case definition demands diagnosis within the first three weeks of life with either viral isolation or positive IgM, participants received a copy of the case definition, study protocol, monthly surveys and a detailed questionnaire for reporting a case. These served as potential sources of education. Highlights and reports presented in *Paediatrics & Child Health*, the CPS journal[1,2] and at the 2008 CPS Annual Conference[3,4] were also educational opportunities.

Did any of this make a difference? One of the CPSP goals is to "raise awareness"[5] amongst participants, and the program is looking at different ways of achieving this goal. The program therefore sought to determine if there was a change in the knowledge level of the participants with respect to the most effective way to make the diagnosis. A post-study survey was sent asking the same question as in the pre-study survey. The response rate for the prestudy survey (2005) was 32% and for the post-study survey (2009) only 17%. Results are presented in the table.

Table – Summary of cCMV survey results

"You see a three-day-old infant in the newborn nursery who has symptoms and signs suggestive of congenital CMV infection. If you had to choose only one test to confirm this diagnosis, which one of the following tests would you order?"

	2009 post-study	2005 pre-study
Answer	**Number (percentage)**	**Number (percentage)**
1. CMV IgG and IgM on cord blood	36 (9%)	117 (15%)
2. Throat swab for CMV culture or PCR	5 (1%)	10 (1%)
3. Torch serology	18 (4%)	82 (10%)
4. Urine specimen for CMV culture or PCR	348 (83%)	537 (68%)
5. Unknown	13 (3%)	34 (4%)
Incomplete	1 (0%)	6 (2%)
Total	**421 (100%)**	**786 (100%)**

The responses differed before and after the study: the percentage of paediatricians correctly choosing urine specimen for CMV testing increased from 68% to 83%; the percentage who selected incorrect serology answers (1 and 3) decreased from 25% to 13%; and the percentage who correctly chose viral isolation answers (2 and 4) increased from 70% to 84%.

The proportion of paediatricians who answered the survey question correctly was higher after the completion of the study. A limitation of the data is that survey responses were anonymous and unlinked; it is unknown who repeated the survey and whether the same respondents who responded correctly the first time were more likely to respond this time. While more respondents answered correctly, it is unknown whether non-respondents were less likely to respond correctly. Samples have been treated as independent in the analysis.

Despite the low response rate of the post-study survey, the change in knowledge level suggests the ability of the program to raise awareness of a condition and educate CPSP participants, while generating valuable epidemiological data about rare high-impact conditions in Canadian children. The program will need to explore various ways of documenting increased awareness amongst participants.

References

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