Reviewer's report

Title: Occupational risk for cytomegalovirus, parvovirus B19, and varicella-zoster virus in women working in child day care

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Reviewer: Sheila Dollard

Reviewer's report:

The authors tested sera from 242 day care workers (DCW) and a comparison group of 298 non-DCW for antibody to CMV, VZV and parvovirus B19 to assess whether working in daycare is an occupational risk for infection of these viruses. Based on differences in IgG seroprevalence, they concluded that that working in a child day care center poses a significant risk for CMV and B19 infection. Several other associations between demographic characteristics and infection were reported.

The main weakness of the paper is the lack of multivariable analyses which is especially necessary with the highly dissimilar comparison group in this study. The Amsterdam population (comparison group) was substantially demographically different from the day care workers (DCW) in every variable measured (Table 1). For example, Characteristics such as age, having children, and number of children highly correlate with each other and need to be examined independently. The following are the most interesting and clear results that should be the focus of a much shorter paper: (1) independent association between CMV infection and European DCW, (2) independent association between B19 infection and DCW, (3) and the similar positivity of B19 between ethnicities in contrast to CMV and VZV. In the case of VZV, that is established by other studies and not as much in this study.

Major revisions:

1. Results for VZV are the weakest and can be reduced substantially. All sera were tested for antibodies to CMV and B19 with a single test. In contrast, VZV antibodies were measured in the DCW and the Amsterdam groups using different serology tests which may well have performed differently and contributed to the relatively small difference in high VZV prevalence in the 2 groups (100%, 94%). Moreover, no logistic regression analysis was possible to control for obvious confounders of age and ethnicity. Thus, the authors cannot conclude that higher prevalence among DCW was due to exposure to children. Results with these limitations mentioned can be summarized briefly as text and Table 4 can be eliminated.

2. Figure 1 shows higher CMV seroprevalence by country of birth which is well established as the authors note. Many studies have shown that CMV seroprevaenlce increases with age, as observed with all human herpesviruses. Ref 11 provided by the authors, Staras et al., 2008, examined children and should be replaced with Staras et al., 2006 CID, that examined a large population
sample of women of child-bearing age and showed a strong association between CMV seroprevalence and age. Lack of increase with age and decrease between some age groups shown in Fig 1 likely reflect demographic heterogeneity in sample and small sample size. Fig 1 can thus be eliminated or this contradiction with the expected result and the literature can be included in the discussion.

Minor revision on CMV serology testing: “Women with dubious and positive results were considered immune.” Need to replace ‘dubious’ with a term that is clear.

Optional revision: The authors may consider noting in the Discussion similar infectious fluids for B19 (respiratory droplets) and CMV (saliva) and overlapping transmission routes in a day care setting that could be possibly be reduced by the same precaution measures.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

no competing interests