Reviewer's report

Title: Successive influenza virus infection and Streptococcus pneumoniae stimulation alter human dendritic cell function

Version: 1 Date: 28 March 2011

Reviewer: Keer Sun

Reviewer's report:

The present study seeks to characterize human DC responses to concurrent or sequential in vitro stimulation of live influenza virus and heat-killed pneumococci. Although there was a detailed description of DC apoptosis, phenotypic maturation, and cytokine responses in a time and dose dependent manner, the significance of these observations is limited by the complexity in rationalizing the timing and magnitude of in vitro stimulation to physiological circumstance. The authors should at least discuss the possible involvement and role of DCs in the context of viral and bacterial co-infection (in vivo) relevant to their experimental approaches and results. In particular,

1. Regarding to time-dependent responses including DC apoptosis (Fig. 2) and pro-inflammation cytokine production (Fig. 5), significant synergistic stimulation was only observed at 6hr interval (with a high dose of pneumococci), but not 0hr or 24hr. Does this point to an insignificant role of DCs in most cases of co-infection (when it happens beyond this narrow interval)?

2. Increased CD83 and CD86 expression was observed in certain co-stimulated DCs when compared to these treated with influenza virus alone, but not these treated with pneumococci alone (Fig. 3). In addition, decreased IL-10 production was found in co-stimulated DCs when compared to these treated with pneumococci alone, but not these treated with influenza virus alone (Fig.6). These separated observations do not provide enough support for their involvement in viral and bacterial co-infection.

Major Compulsory Revisions.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests.