Data in Brief 8 (2016) 536–544

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

Data correlations between gender, cytomegalovirus infection and T cells, NK cells, and soluble immune mediators in elderly humans

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ARTICLE INFO

Article history:
Received 8 April 2016
Received in revised form
30 May 2016
Accepted 7 June 2016
Available online 15 June 2016

Keywords:
NK cell
Ageing
Cytomegalovirus
T cell
Sex factors
Vitamin D
C-reactive protein
Adiponectin
IL-15
Sphingosine-1-phosphate
Retinol binding protein-4

ABSTRACT

We describe a cohort of 50 elderly subjects, age at least 70 years. We present gender-specific findings in T lymphocyte markers and soluble immune mediators. We show the correlation between cytomegalovirus infection status with $CD56^{dim}$ NK cell responses to a variety of stimuli and with $CD56^{bright}/CD56^{dim}$ NK cell ratio. We also present the correlation of retinol binding protein (RBP)−4 plasma levels with NK cell responses and we explore the relationship between gender and adiponectin, 25(OH)D (vitamin D), and RBP4 in affecting $CD56^{dim}$ NK cell responses. These data are discussed in Al-Attar et al. (2016) [1].

DOI of original article: http://dx.doi.org/10.1016/j.mad.2016.04.001
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http://dx.doi.org/10.1016/j.dib.2016.06.006

Specifications Table

Subject area	*Immunology*
More specific subject area	*Sex differences in immune cells and soluble mediators*
Type of data	*Tables*
How data was acquired	*Flow cytometry and enzyme-linked immunosorbent assay*
Data format	*Analyzed*
Experimental factors	*Immune cells were analyzed immediately ex vivo or were stimulated in vitro*
Experimental features	*Correlations and mean differences were calculated*
Data source location	*Lexington, KY – USA*
Data accessibility	*Data are within this article*

Value of the data

- Researchers need to be aware of the gender differences in NK cell responses to various stimuli.
- Exposure to cytomegalovirus (CMV) affects immune responses from T and NK cells and could therefore be an important factor to consider when performing research in elderly human subjects.
- Levels of soluble plasma immune mediators adiponectin and vitamin D (25(OH)D) which affect NK cell development and activity are higher in elderly women compared to men, and are important factors to consider when studying human NK cells.

1. Data

Enclosed are data concerning T cell markers and subsets found in elderly women and men (Table 1). Also shown is the effect of cytomegalovirus (CMV) infection on $CD56^{dim}$ NK cell responses to a variety of stimuli and on the $CD56^{bright}/CD56^{dim}$ NK cell ratio in blood lymphocytes (Table 2). We present the levels of various plasma immune mediators and their levels in elderly women and men (Table 3). We show how plasma RBP4 level correlates with NK cell responses in vitro (Table 4) and we explore if the interaction between gender and plasma adiponectin,RBP4, and 25(OH)D (vitamin D) affects $CD56^{dim}$ NK cell responses in vitro (Table 5). Full details of the data can be found in Al-Attar et al. [1].

2. Experimental design, materials and methods

Male and female subjects >70 years were recruited from volunteer donor pools at the University of Kentucky Sanders-Brown Center on Aging and by advertisements. Venous blood from 26 males (age mean $\pm$ standard error of the mean (SEM), 77.8 ± 0.31, range 70–90 years) and 24 females (age mean $\pm$ SEM, 77.0 ± 0.91, range 70–85 years) were analyzed between October 2012 and April 2014. Prospective donors were screened by telephone interview to exclude those with conditions previously demonstrated to affect NK cells. Exclusion criteria included hospitalization or serious illness in the prior year, history of immunologic illness (rheumatoid arthritis, systemic lupus, scleroderma, polymyositis, Sjögren's syndrome, transplantation, etc), current use of immunomodulatory medications (e.g., corticosteroids), inability to walk one city block, regular consumption of two or more alcoholic beverages per day (28 g ethanol), diabetes, and a history of cancer within the last 10 years, except non-melanoma skin cancers. Two female subjects (but no male subjects) received hormone replacement therapy, one with topical estrogen and one with topical estrogen, progesterone, and testosterone. The gender differences affecting $CD56^{dim}$ NK cell CD38 density and the $CD56^{bright}$ to $CD56^{dim}$ NK cell ratio were no longer significant when the hormone replacement subjects were excluded from analysis. All other gender differences reported below remained significant after exclusion of these two subjects. Blood samples were obtained from people without acute