Mucosal Immunity and Self-reported Upper Respiratory Symptoms in a Cohort of Premier League Academy Soccer Players

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ABSTRACT

Introduction

The measurement of a number of salivary biomarkers has become common place in Premier League Soccer teams, in an attempt to monitor responses to training, competition, lifestyle factors and stress. The purpose of this paper was to analyse markers of mucosal immunity through the second half of a competitive season in a cohort of Premier League Academy players.

Methods

A total of 256 saliva samples were taken during routine monitoring of a cohort 16 players in the under-18 age group of an English Premier League club Academy. Morning saliva samples were collected weekly over a period of 17 weeks between the christmas break and the end of the competitive season. The IgA concentration of the samples was determined using an IPRO Point of Care device and the remaining sample was sent to a remote laboratory for the subsequent determination of IgG and alpha-amylase (sAA) by ELISA. On any occasion that players perceived upper respiratory symptoms (URS) a WURSS questionnaire was completed and extra saliva samples (115) taken each day until symptoms had ceased.

Results

IgA, IgG and sAA were highly variable between subjects (with CV 57.6, 81.4 and 59.5% respectively) and within subjects (48.5, 65.9, and 46.4%) through the 17 week period. Weekly group mean (±SD) IgA ranged from 114.1 (57.5) to 318.4 (176) μg/ml, IgG from 27.4 (23.7) to 61.7 (30.5) μg/ml and sAA from 191.9 (100.7) to 370.6 (203) μg/ml, but no significant differences were seen due to the high individual variability. During the 17 week study period 26 incidences of URS were reported by 15 of the players and were monitored using WURSS and subsequent saliva testing. A drop in IgA by more than 40% from individual healthy mean values, within two weeks of each URS episode, was seen in 14 of the 26 episodes. A drop in IgA/sAA ratio by more than 40% of individual healthy mean values, within two weeks of each URS episode, was seen in 19 of the 26 episodes. However, using the same individualised criteria for IgA and IgA/sAA ratio there were 28 and 38 samples, respectively, where such drops did not lead to URS, with several such occurences seen within the same individuals. In cases where URS were reported, subsequent IgA during perceived symptoms was seen to rise 40% above individual healthy mean levels in 15 of the 26 episodes.

Conclusion

Salivary markers of mucosal immunity, particularly IgA and sAA when expressed as percentages of healthy baseline norms have good potential for predicting self-reported URS in this cohort of elite under 18 soccer players. Rather than remain suppressed through symptoms, these markers were often then seen to rise by more than 40%. Creation of individual profiles of such salivary markers seems warranted for purposes of monitoring.