

**Relation between TNF-alpha and exercise induced bronchoconstriction**

SANTOS J M B<sup>1</sup>, LUNA JUNIOR L A L<sup>1</sup>, SIERRA A P R<sup>2</sup>, COSTA L A R<sup>2</sup>, BACHI A L L<sup>3</sup> and VAISBERG M<sup>1</sup>

<sup>1</sup>Department of Otorrinolaringology and Head and Neck Surgery; Federal University of São Paulo; São Paulo, Brazil.

<sup>2</sup>Department of Sport, School of Physical Education and Sport, University of São Paulo, São Paulo, Brazil.

<sup>3</sup>Microbiology, Immunology, and Parasitology Department, Federal University of São Paulo; São Paulo, Brazil.

**ABSTRACT**

**Introduction:** Exercise-induced bronchoconstriction (EIB) describes an acute airway narrowing that occurs as a result of exercise. EIB is associated with a hyperosmolar environment that lead to airway smooth muscle contraction. The proinflammatory cytokine, TNF-alpha, has a prominent role in the development of airway hiperresponsiveness (AHR). A single bout of heavy exercise can trigger EIB. The aim of this research was to compare the response of TNF-alpha over time with the presence or absence of EIB in marathon runners. **Methods:** Thirty-eight male runners, who did not have any chronic or acute airway disease, performed maximal cardiopulmonary exercise testing on a treadmill coupled to the gas analyzer (FitMate™, Cosmed, Italy). Was used a ramp protocol with fixed slope of 1% and an increase of load (1km/h) every minute. Spirometry was performed before (pre), immediately after, five, ten, fifteen and twenty minutes after exercise stress testing. Were considered positive for BIE those athletes that presented a decrease in expiratory volume in one second greater than 10% in any of the spirometric tests. Blood samples were obtained the day before the marathon, immediately and after 72 hours after the race. Cytokines were determined in serum by ELISA. Was used analysis of variance (ANOVA) with two factors, group and time of blood collection, considering repeated measures on the time factor. In the case of statistical significance for interaction group and blood was concluded that the behavior over time was significantly different between EIB negative (-) and EIB positive (+), in this case applied the method of Tukey's multiple comparisons to determine the moment that occurred these differences (p<0.05). **Results:** We observed a statistically significant difference (p=0.048) in the behavior of the concentration of TNF-alpha between groups EIB- and EIB+. The measure pre of the EIB+ have an higher concentration of TNF-alpha compared to those obtained immediately after the marathon for EIB+ and the results obtained at the three moments for EIB-. (Figure 1). **Conclusion:** Our results suggests that an inflammatory status in serum of the marathon runners presenting BIE, before the race may be associated with bronchoconstriction triggering.

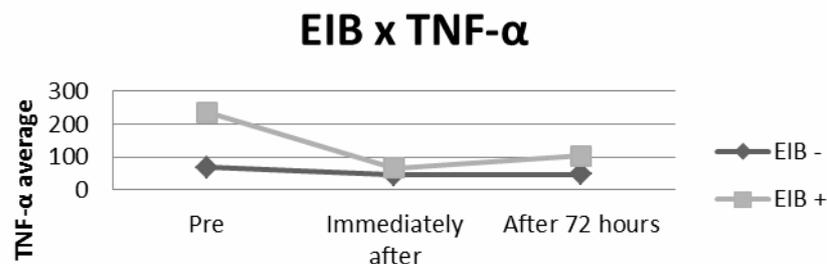


Figure 1: Comparison between BIE- and BIE+ relation to TNF-alpha concentration in the serum over time (p=0.048).