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Title: Similar cellular composition of induced sputum in Marathon and Half-Marathon runners

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Body: In our previous studies, we reported increased neutrophil (PMN) differential counts in induced sputum of marathon (M) runners (Bonsignore et al, 2001). Conversely, increased bronchial epithelial cell (BEC) differential counts were found in half-marathon (HM) runners (Chimenti et al, 2010). To better understand the differences previously found between M and HM runners, we studied 11 non-asthmatic amateur athletes (HM n=6, M n=5, age: 44.5±6.7 yrs, race time: HM 101±18 min, M 218±35 min) participating to the 2012 Palermo Marathon. We collected induced sputum samples 4 to 5 days before the race (PRE), 2 hours after the race (RACE), and the following morning (POST). Induced sputum was processed according to the plug technique. Results are shown in the table (means±SD).

Differential cell counts of BEC and PMN in induced sputum

	PMN HM%	PMN M%	BEC HM %	BEC M%
PRE	19.0±14.5	24.3±20.3	3.9±7.7	0.3±0.5
RACE	47.8±19.9*	48.3±17.4*	28.4±13.8 [§]	21.9±10.6 [§]

POST	51.5±18.4*	50.7±11.3*	2.1±1.6	5.3±2.3
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* p<0.05 vs PRE, § p<0.05 vs PRE and POST

In both HM and M runners, PMN differential counts increased from PRE to RACE and remained elevated in POST, whereas BEC differential counts increased from PRE to RACE, but returned to baseline at POST. These preliminary results indicate that BEC damage, possibly induced by hyperosmolar exposure during exercise hyperpnea, occurs for the entire duration of endurance exercise but is transient. Conversely, PMNs were recruited in the airways for a longer time, possibly secondary to chemotactic stimuli released by BEC during exercise. Lack of differences between HM and M runners suggests that duration of the endurance race does not affect the airway cell response to exercise.

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