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Relationship between pulmonary vasoactive factors and pulmonary arterial pressure in acute high altitude reaction and its change after return to lower altitude
Q. Zhou
Department of High Altitude Disease, Third Military Medical University, Chongqing, China, People’s Republic of
Objective: To assess the relationship between pulmonary vasoactive factors and pulmonary arterial pressure (PAP) in acute high altitude reaction (AHAR) and its change after return to lower altitude.
Methods: 96 officers and soldiers of rapidly getting into high altitude (3700 m) combined strong physical work were analyzed. According to the symptomatic scores of AHAR, they were divided into 3 groups: severe (group A, n=24), mild to moderate (group B, n=47) and without AHAR (group C, n=25). Plasma intermedin (IMD), adrenomedulin (ADM), endothelin-1 (ET-1) and mean pulmonary arterial pressure (mPAP) were measured at that altitude for 50 days and after return to lower altitude (1500 m) for 12 hs and 15 ds and 50 healthy volunteers at 1500 m altitude served as control (group D).
Results: Level of plasma IMD, ADM, ET-1 and mPAP were significantly higher in group A than those in group B, C and D (all \( P < 0.01 \)), and there were significantly differences between the group B and group C, also group C and group D (all \( P < 0.01 \)). At altitude 3700 m for 50 ds, AHAR total scores were positively correlated with mPAP, IMD, ADM and ET-1. IMD, ADM and ET-1 was positively correlated with mPAP (all \( P < 0.01 \)). After return to lower altitude, mPAP, IMD, ADM and ET-1 were significantly higher at 3700 m for 50 ds than those at 1500 m for 12 hs, 15 ds and the group D (all \( P < 0.01 \)); there was significantly difference at 1 500 m between 12 h and 15 d (all \( P < 0.01 \)); there were no difference between at 15 d and the group D (all \( P > 0.05 \)).
Conclusion: IMD, ADM and ET-1 may play important roles in mechanism of PAH in AHAR. Imbalance of these factors has great effects on the development of hypoxic pulmonary hypertension. It was obviously improved after return to lower altitude 12hs, and recovered to normal after 15d.