

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Human Physiology in Space (2)

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EFFECTS OF 15 DAY -6 DEGREE HEAD DOWN BED REST (HDBR) ON FEMALE ORTHOSTATIC
TOLERANCE

Abstract

Abstract Objective To explore the effects of 15 day -6 degree HDBR on female orthostatic tolerance for future countermeasure used in outer space. **Methods** 15 female volunteers experienced the 15 day HDBR. The 70 degree tilting test(TT) were done at 1 day before and after HDBR, and the blood sample before and after each TT were analyzed for blood rennin activity(PRA), angiotensin II(AT II) and noradrenalin(NE) concentration changes induced by TT. **Results** After 15 day HDBR, the incidence of female orthostatic intolerance was 8/15(53.3%). Among them, 6(40.0%) subjects experienced pre syncope syndrome, 2(13.3%) subjects experienced postural tachycardia syndrome(POTS). The diastolic blood pressure(DIA), heart rate(HR) and total peripheral resistance(TPR)increased significantly after TT, and the stroke volume(SV) and cardiac output(CO) decreased. The DIA and HR were higher after 15 day HDBR than before, but the TPR and CO were not affected by HDBR. The main difference between normal group(Normal) and orthostatic intolerance group(Oier) was the HR increment after TT, Oier group was much higher than normal group (Oier: 55.54+/-11.32% vs normal:42.82+/-13.98%). The results of NE concentration changes under TT showed that there was significant difference between normal and Oier groups in their rest(spine) position. The PRA was inhibited by 15 day HDBR, but it has no significant changes under TT before and after HDBR. The ATII were activated by TT, however not affected by HDBR. **Conclusion** The incidence of OI after HDBR is quite high in female, and the syndromes are diverse. The abnormal of HR regulation under orthostatic stimulus may be the main cause of OI after space flight.