

Objective: Acute high altitude exposure may increase 24-hour ambulatory blood pressure (ABP), but change in blood pressure with acclimatization is poorly understood. We compare 24-hour ABP at low altitude versus the first 24 hours at high altitude and after 72 hours of acclimatization.

Methods: This is a prospective observational cohort study of adult lowlanders, comparing 24-hour ABP at low (<1,000m) versus high-altitude (2,500-2,800m). BP was monitored every 30 minutes while awake and every hour overnight for 24 hours using Welch-Allyn6100 ABP monitors. High altitude data was collected during the first and third days at high altitude exposure.

Results: We present preliminary data on 9 participants (f=6, m=3) with complete matched data for all three time points (mean age 49 (range 34-70), 2 with underlying hypertension). We found an increase in average ambulatory SBP between low and high altitude (121 mmHg vs 133 mmHg, respectively), with a mean SBP increase of 12 mmHg, $p=0.03$. Diurnal SBP was greater at high altitude (123 vs 137, $p=0.008$), but nocturnal SBP did not differ (112 vs 121, $p=NS$). Results were similar for DBP. Comparing the first 24h versus 72h at high altitude, we found no differences in average (133 mmHg vs 132 mmHg, $p=NS$), diurnal SBP (137 mmHg vs 136 mmHg, $p=NS$) or nocturnal SBP (121 mmHg vs 115 mmHg, $p=NS$).

Conclusions: In our cohort, BP was elevated at high altitude compared to low altitude due to increases in diurnal BP, and remained so after 72 hours of acclimatization. The clinical importance and the long-term effects of elevated BP during high altitude sojourns remain to be determined.

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