Newborn Oxygen Saturation at Mild Altitude versus Sea Level: Implications for Neonatal Screening for Critical Congenital Heart Disease

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Aim

To determine the normal SpO(2) in healthy term newborns at mild-altitude (MA, 780 meters) compared to sea level (SL), within the context of universal screening for critical congenital heart disease (CCHD) METHODS: we studied 199 (119 at MA and 80 at SL) consecutively born healthy newborns. SpO(2) recordings were at 24-72 hours using Masimo SET Radical-7 on the right hand and left foot.

Results

Mean SpO(2) was lower at MA compared to SL in the right hand (97.86 ±1.58 vs 98.28 ±1.41, p =0.05) and left foot (98.49 ±1.35 vs 98.90 ±1.16, p =0.03). No infant with SpO(2) <95% had CCHD. Extrapolating with predicted regression lines set at 95% CI, a SpO(2) cutoff of 95% would result in up to 3.5 times more false positive screens at MA compared to SL.

Conclusions

At MA, SpO(2) is approximately 0.4% lower compared to SL. Our study supports the AAP recommendation suggesting algorithm cutoffs may need adjustment in high-altitude nurseries and suggest broadening it to MA as well.