Glucocorticoid metabolites in newborns : a marker for traffic noise related stress?

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Traffic noise has been associated with an increased risk for several non-auditory health effects, which may be explained by a noise-induced release of stress hormones (e.g. glucocorticoids). Although several studies in children and adults have indicated an increased secretion of glucocorticoids after exposure to noise, information regarding newborns is scarce.; To investigate the association between residential exposure to road traffic noise and postnatal stress response, as assessed by the concentration of glucocorticoids at five weeks of age.; Residential noise exposure was estimated for each infant based on spatially detailed modeled data. Adjusted multivariable linear regression models were used to estimate the association between noise exposure and the concentration of nine glucocorticoid metabolites measured in urine of 165 infants from a prospective birth cohort in Bern, Switzerland. Noise exposure (Lden, dB) was categorized into tertiles: low (reference), medium and high.; Indications of a positive association were found between high road traffic noise and cortisol (% change relative to the reference: 12.1% [95% confidence interval: -10.3, 40.1%]) and cortisone (22.6% [-1.8, 53.0%]), but just the latter was borderline significant. Borderline significant associations were also found between downstream metabolites and higher road traffic noise levels; associations were found to be both positive (i.e. for β-cortolone (51.5% [-0.9, 131.5%])) and negative (i.e. for α-cortolone (-18.3% [-33.6, 0.6%]) and tetrahydrocortisol (-23.7% [-42.8, 1.9%])).; Our findings suggest a potential association between exposure to higher road traffic noise levels and changes in glucocorticoid metabolism in early postnatal life. A possible physiological relevance and associations with short- and long-term adverse health effects in a larger study population need to be further investigated.
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