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INCREASED IL-6 CONCENTRATIONS IN NEWBORNS AFTER EXPOSURE TO PARTICULATE MATTER DURING PREGNANCY

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Background and aims: Nanoparticles can pass the lung tissue, reach the circulation and in case of transplacental transport may affect the unborn child. Aim of this work was to determine whether exposure to particulate matter containing nanoparticles in part resulting from diesel exhaust may influence cytokine levels in the cord blood of newborns. We hypothesized that proinflammatory markers are increased in children of highly exposed mothers compared to controls.

Methods: The concentrations of 24 cytokines were identified in the cord blood of 33 newborns. According to the mother's residence the children were divided into two groups. Group 1 (low exposure) contained the children of mothers living more than 1.5 km from streets with more than 20,000 cars per day or near streets with less traffic. Group 2 (high exposure) contained the children of mothers living closer than 1.5 km to streets with more than 20,000 cars per day or near streets with more traffic.

Median concentrations of proinflammatory cytokines in the two groups were compared using PASW 18 Statistics.

Results: The median concentrations for IL-6 were significantly different ($p = 0.016$, Median test) in the two groups being 5.8 pg/ml in group 1 and 11.4 pg/ml in group 2.

Conclusions: Newborns whose mothers live close to streets with high exposure show increased levels of IL-6. Nanoparticles, among others from diesel exhaust, cause increased IL-6 levels and inflammatory processes as they are bioactive and may pass the placenta.