The relationship between perfluoroalkyl compounds concentrations at ages 2, 4, and 6 years and thyroid function in early childhood: a prospective cohort study

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OBJECTIVES

Perfluoroalkyl compounds (PFAS) have been suggested as potential thyroid disrupting chemicals. However, previous studies about the associations between PFAS and childhood thyroid function are scarce, and inconclusive. We evaluated the PFAS exposure in Korean preschool children, and investigated the temporal relationship with thyroid hormone concentration.

METHODS

Subjects

Total 660 children who visited the hospital at least once at 2, 4, or 6 years of age from the Environment and Development of Children (EDC) cohort study

Exclusion criteria

Multiple births, missing data on thyroid function tests or PFAS measurements

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</table>

RESULTS

Detection frequencies of PFAS at ages 2, 4, and 6 years

Serum levels of perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), perfluorohexane sulfonic acid (PFHxS), and perfluorooctane sulfonic acid (PFOS) were detected in >90% at all studied ages.

Relationship of serum PFAS concentrations with thyroid function

In boys

Serum levels of PFOS, PFOA, PFHxS, PFDA, and PFNA were consistently detected >90% in Korean children from ages 2, 4, to 6 years. Significant effect of PFAS on increased FT4 and T3 and decreased TSH levels was found among boys.

CONCLUSIONS

PFOS, PFOA, PFHxS, PFDA, and PFNA were consistently detected >90% in Korean children from ages 2, 4, to 6 years. Significant effect of PFAS on increased FT4 and T3 and decreased TSH levels was found among boys.

REFERENCES