The effect of exposure of air pollutants on congenital anomalies at the time of conception

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Objectives
The purpose of this retrospective study was to determine the effect of prenatal exposure to air pollutants and seasonal pattern of fetal congenital anomalies in Ansan-si, Gyeonggi-do, South Korea.

Methods
We analyzed 91 women with congenital anomalies from 2014 to 2016. Seasonal variations in term of the month of conception and mean value of air pollutants concentration in patients’ living areas at the time of conception were investigated. Congenital anomalies were categorized into central nervous system, face, heart, lung, gastrointestinal, genitourinary, hydrodrops, others and complex type. All anomalies were confirmed postnatally. One way ANOVA was utilized for statistical analysis.

Results
Among air pollutants, mean value of PM10 concentration was 51.3μg/m³. It was exceeded the WHO air quality guidelines, but there were no differences among different types of anomalies. Mean values of the other pollutants(O3, SO2, NO2, CO) were not exceeded the guidelines. Though incidences of heart and lung anomalies were elevated in summer/full season, it wasn’t statistically significant. Mean value of CO concentration of winter/spring season was significantly higher than summer/fall, but it was still lower than usually known hazardous level.

Conclusion
Our finding shows that PM10 concentration was high in atmosphere, when the moths of women with congenital anomalies conceived. However, there were no differences among different types of anomalies. A larger observational study comparing to normal pregnancy should be followed.