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LETTER TO THE EDITOR

The Coronavirus Might be Paradoxically Beneficial on the Risk of Autism

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Air pollution is a main public health (The Lancet 2017) and economic (Dockery and Evans 2017) issue. Air pollution increases the risk of mortality (Dockery and Evans 2017) and morbidity from a wide range of diseases (especially respiratory, cardiovascular and cardiorespiratory diseases) (Shah et al. 2013; Brugha and Grigg 2014; Loxham et al. 2019). Moreover, it is now well established that maternal exposure to air pollution increases the risk of developing an autism spectrum disorder (ASD) in newborns (Kerin et al. 2018; Chun et al. 2020; Dutheil et al. 2020), with a dose–response relationship (McGuinn et al. 2020). ASD is a challenging pathology with actual global increase of the prevalence (Masi et al. 2017; Kogan et al. 2018), putatively linked with the increase in air pollution. Considering that there are more than 200 million of pregnancy per year ("WHO Chapter 3" n.d.), there is a huge challenge to limit air pollution during pregnancy. The global Coronavirus Covid19 outbreak reduced dramatically the air pollution such as NO_2 or fine particulates especially in China (Chen et al. 2020) (Fig. 1).

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Because of quarantine measures to stop the spread of the virus, people are confined at home, factories activity is slowed down or even stopped in regions the most affected by the virus, transports and commerce have slowed down. This economic slowdown leads to a concomitant consequent decrease of air pollution, first near Wuhan, Hubei Province in China, the initial infection site, then in the whole China (Le et al. 2020), then worldwide (Berman et al. 2020; Nakada et al. 2020; Stivastava et al. 2020; Zambrano-Monserrate et al. 2020). This coronavirus had been responsible for a massive decrease up to 90% of NO2 during the city-lockdown period in Wuhan, 40–60% for China (Le et al. 2020) and worldwide megalopolis (Berman et al. 2020; Nakada et al. 2020; Stivastava et al. 2020; Zambrano-Monserrate et al. 2020). Of course, this observation has to be moderate because this dramatically air pollution reduction will not be permanent: when the Chinese economic activity will resume, industries will catch up rapidly, if the demand is there (Srivastava et al. 2020; Sharma and Balyan 2020). However, paradoxically, the worldwide outbreak of Covid19 might have some benefits for future newborns, with a decreasing risk of autism because of the reduction of air pollution, and may also have other health benefits on future newborns and mothers, such as avoiding a low-weight at birth, preterm birth (Ritz et al. 2000; Guo et al. 2019; Liu et al. 2019), stillbirth (Dastoorpoor et al. 2018), preeclampsia (Pedersen et al. 2014; Nobles et al. 2019), or gestational diabete (Elshahidi 2019).

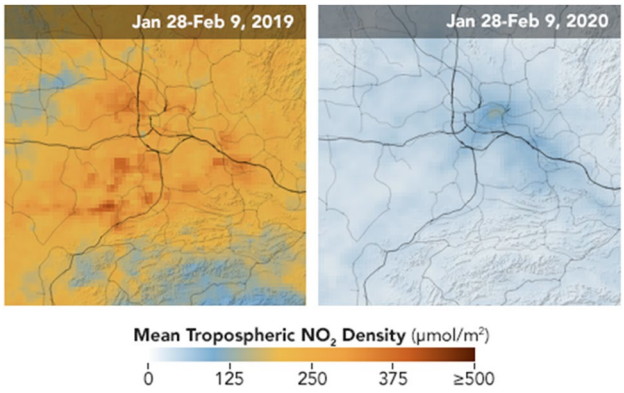

Fig. 1 Pollutant drop in Wuhan Province, China, following the global slowdown of economy because of the Coronavirus covid-19 epidemic (images from NASA https://earthobservatory.nasa.gov/images/146362)

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