

AIR POLLUTANTS RISK FACTORS CONTRIBUTING TO NEOVASCULAR AGE-RELATED MACULAR DEGENERATION (NVAMD) IN ISRAEL

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INTRODUCTION: AMD is a leading cause of visual loss in the developed world. It is a multifactorial disease associating genetic, lifestyle and environmental causes with possible contribution of air pollution.

PURPOSE: to investigate the association between frequency of AMD in Israel and air pollution measurements.

METHODS: Data regarding patients with NVAMD undergoing intravitreal anti VEGF injections in the ophthalmology institute in Assuta in Tel Aviv - the main ophthalmology clinic serving Maccabi health services in Israel, was collected including geographic distribution.

The number of AMD patients were extracted from these records, grouped by cities, and combined with the census of Israel Central Bureau of Statistics from which we collected the age distribution in different cities.

Rates of various types of air pollutants in Israel were collected from Israel Ministry of environment data center for air pollution data. For each city, the AMD rates and their air quality measures were calculated.

We used multiple regression analysis to detect possible associations between air pollution types and prevalence of AMD.

RESULTS: A total of 1815 patients with NVAMD treated with anti VEGF were identified between 1/2015-12/2019. We found a clear contributing effect of several air pollutants particles, mostly of small sizes, to the prevalence of AMD.

While we did not find clear effect to CO particles, PM10 or PM25 particles, we did find a clear and strong inverse effect on AMD rates in cities with higher rates of NOx (p – value 0.005) and a weaker effect of NO2, SO2 particles (p–value 0.05). Interestingly, we find a positive effect of ground level ozone (O3) which might be due to reduced radiation due to Ozone layers filtering.

DISCUSSION: Smoking is a known risk factor for AMD. Further studies inspecting possible similar mechanisms behind smoking particles - AMD and air pollution particles - AMD effects might be required.

Conclusions: Our results support the contribution of small particles AMD to the prevalence of AMD.