

Inhaled beta-2 agonists not associated with lower risk of Parkinson's disease, finds study

June 14 2023



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Beta-2 agonists are bronchodilators commonly used in the treatment of asthma and chronic obstructive pulmonary disease (COPD). Although beta-2 agonists have been associated with a reduced risk of Parkinson's

disease in some previous epidemiological studies, this association was not found in a recent register-based study from the University of Eastern Finland. The findings were published in *Clinical Epidemiology*.

Accumulation of the alpha-synuclein protein in the brain plays a central role in Parkinson's [disease](#). Beta-2 agonists were found to decrease the expression of alpha-synuclein gene in animal and cell models, which could be beneficial in terms of Parkinson's disease. Furthermore, despite beta-2 agonists having been associated with a reduced risk of Parkinson's disease in some earlier epidemiological studies, confounding factors such as smoking may have influenced this association.

Smoking is the leading cause of COPD, and it may worsen [asthma control](#) and result in an increased need of beta-2 agonists. However, smoking is also associated with a reduced risk of Parkinson's disease, making it important to control for confounding factors in the study setting. Although nationwide Finnish register data do not contain information on smoking, its impact may be controlled for by restricting the study on individuals among whom smoking history is more likely to be evenly distributed.

According to the newly published case-control study among people diagnosed with asthma or COPD, the use of inhaled short- or long-acting beta-2 agonists at least three years before Parkinson's disease diagnosis was not associated with the risk of Parkinson's disease. There was no consistent dose-response association either. Different comorbidities such as cardiovascular diseases, along with age, sex and duration of asthma or COPD were controlled for in the study.

This study was conducted as part of the FINPARK study, which covers 22,189 community-dwelling Finnish residents with Parkinson's disease, and a matched comparison cohort. The study was limited to persons who had been diagnosed with asthma or COPD at least three years before

Parkinson's disease diagnosis.

More information: Anne Paakinaho et al, β 2-Adrenoceptor Agonists in Asthma or Chronic Obstructive Pulmonary Disease and Risk of Parkinson's Disease: Nested Case-Control Study, *Clinical Epidemiology* (2023). [DOI: 10.2147/CLEP.S405325](https://doi.org/10.2147/CLEP.S405325)

Provided by University of Eastern Finland

Citation: Inhaled beta-2 agonists not associated with lower risk of Parkinson's disease, finds study (2023, June 14) retrieved 13 May 2024 from <https://medicalxpress.com/news/2023-06-inhaled-beta-agonists-parkinson-disease.html>

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