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Author response: Use of β2-adrenoreceptor agonist and antagonist drugs and risk of Parkinson disease

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We appreciate the comments from Drs. Scherzer, Riise, and Locascio on our article[1] on the effects of β2-adrenoceptor (β2AR) antagonists and agonists and risk of Parkinson disease (PD). Since the initial publication,[2] this hypothesis has been scrutinized by multiple groups, yielding conflicting results.[2–5]

We maintain our interpretation that the observed epidemiologic associations do not reasonably support a causal relationship between β2ARs and PD. As highlighted in our article,[1] we are particularly concerned about (1) the unlikely dose-response patterns, where very low cumulative use of β2AR agonist seems to infer a marked protective effect, whereas the effect of β2AR antagonist use attenuates with increasing cumulative use; (2) the observation that timing of exposure relative to time of PD diagnosis had no impact on the observed associations; (3) the observation that other markers of smoking/chronic obstructive pulmonary disease (e.g., inhaled anticholinergics) also showed very strong associations with PD risk. As such, we kindly disagree that our observation that use of inhaled anticholinergics displayed associations was even stronger than for β2AR agonists is not directly relevant to the interpretation of the findings.

In summary, we do not find that our study supports a causal association between β2AR agonists/antagonists and PD. More detailed arguments supporting our perspective have been recently summarized elsewhere.[6]

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Author disclosures are available upon request (journal@neurology.org).