Renin-angiotensin system as a potential target for new therapeutic approaches in Parkinson?s disease

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Introduction: Currently, available therapies for Parkinson?s disease (PD) are symptomatic. Therefore, the search for neuroprotective drugs remains a top priority. Areas covered: In this review, the potential symptomatic or disease-modifying effect of drugs targeting the Renin-Angiotensin System (RAS) in PD will be explored. Expert opinion: The importance of nigrostriatal local RAS has only begun to be unraveled in the last decades. On one hand, there is a complex feedback cycle between RAS and dopamine (DA). On the other hand, RAS affects dopaminergic neurons vulnerability. Neuroprotective effects in animal PD models have been shown for the angiotensin-converting enzyme (ACE) inhibitors captopril and perindopril, and the AT1 receptor antagonists losartan, candesartan and telmisartan. These effects appear to be mediated by a reduction in the overproduction of reactive oxygen species. In a proof-of-concept, randomized, double-blind, crossover study in PD patients, perindopril enhanced the effect of levodopa without inducing dyskinesias. There has not been any clinical trial exploring the neuroprotective effect of RAS drugs, but one cohort study in hypertensive patients suggested a protective effect of ACE inhibitors on PD risk. RAS is a promising target for symptomatic and neuroprotective therapies in PD. Further studies in PD animal models and patients are warranted. © 2017 Informa UK Limited, trading as Taylor & Francis Group.

treatment

angiotensin 1 receptor antagonist

angiotensin II

angiotensin receptor

dipeptidyl carboxypeptidase inhibitor

dopamine

levodopa

reactive oxygen metabolite

angiotensin 1 receptor antagonist

antiparkinson agent

dipeptidyl carboxypeptidase inhibitor

dopamine

neuroprotective agent

reactive oxygen metabolite

brain region

dopaminergic nerve cell

drug effect

drug targeting

human

levodopa-induced dyskinesia

nerve degeneration

neuroprotection

nonhuman

Parkinson disease

renin angiotensin aldosterone system

Review

animal

drug design

drug effects

metabolism

molecularly targeted therapy

Parkinson disease

pathophysiology

randomized controlled trial (topic)

renin angiotensin aldosterone system

Angiotensin II Type 1 Receptor Blockers

Angiotensin-Converting Enzyme Inhibitors

Animals

Antiparkinson Agents

Dopamine

Drug Design

Humans

Molecular Targeted Therapy

Neuroprotective Agents

Parkinson Disease

Randomized Controlled Trials as Topic

Reactive Oxygen Species

Renin-Angiotensin System