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Clinical and pharmacological basis for the use of drugs inhibiting of the RAAS in patients with diabetic neuropathy

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Introduction: The incidence of diabetes and its complications is increasing to staggering proportions. In 2014 the WHO estimated an overall prevalence of 422 million (8.5%) individuals with diabetes mellitus (DM). The diabetic neuropathy (DNP) which is one of complication of DM (50%) comprises a heterogeneous group of disorders that can cause neuronal dysfunction throughout the human body. The optimal therapy involves: blood glucose level control, anticonvulsants, antidepressants and opioid administration, though it does not change pathogenic pattern. The recent studies suggest that the renin angiotensin aldosterone system (RAAS) plays a vital role in regulating glucose metabolism and blood pressure. In the same time the metabolic abnormalities associated with diabetes lead to activation RAAS, which might promote the formation of reactive oxygen species to lead the neuronal dysfunctions. Furthermore, TNFα is part of the response of the organism to hypertension and is originally described as one of the central mediators of inflammation trough the activation of transcription factor NFκB.

Methodology: The study is going on in parallel groups. The patients (enrolled on randomized principle) with DNP will be investigated. Group I with DNP was treated by aliskiren and group II with the same pathology, proceeding with the treatment without aliskiren but given telmisartan, for certainty of aliskiren efficacy. At the start of the trial and on completion of the six weeks period TNFα level and C-peptide are determined.

Findings: Telmisartan has less TNFα modulatory effects than aliskiren, namely, the symptoms of neuropathy as well as blood TNFα level and C-peptide level are not changed significantly.

Conclusion & Significance: TNFα is involved in DNP pathogenesis formation and clinical manifestation. Aliskiren ameliorates symptoms in DNP patients by modulatory impact on TNFα, so we have results for clinical and pharmacological analysis of aliskiren application in DNP. The involvements of RAAS system in developments of DNP need further clinical analysis.

Recent Publications

1. Remuzzi G, Perico N and Macia M, *et al.* (2005) The role of renin-angiotensin-aldosterone system in the progression of chronic kidney disease. Kidney Int Suppl. (99):S57-65.
2. Rahimi Z, Moradi M and Nasri H (2014) A systematic review of the role of renin angiotensin aldosterone system genes in diabetes mellitus, diabetic retinopathy and diabetic neuropathy. J Res Med Sci. 19(11):1090-8.
3. Tanuji Chawla, Deepika Sharma and Archana Singh (2010) Role of the renin angiotensin system in diabetic nephropathy. World J Diabetes DOI:10.4239/wjd.v1.i5.141.
4. Yao Li and Nanwei Tong (2015) Angiotensin converting enzyme I/D polymorphism and diabetic peripheral neuropathy in type 2 diabetes mellitus: A meta-analysis. JRAAS 16(4):787-792.

Biography

Archvadze Anna S H has Over 8 years' experience as a Medical Doctor working in different medical institutions. She has Over 15 years' experience as a Trainer/Teacher of Medical Sciences. Over 11 years' experience in health and Social project/program development, execution, monitoring and completion, Over 7 years' experience in International Project Management working for the world bank financed health projects, Over 5 years' experience in an assessment of training needs, design and elaboration of training programs, provision of trainings for emergency care medical staff and for healthcare service providers, Over 10 years of experience in supervision of the contract performance with medical institutions, pharmaceutical firms, governmental and non-governmental organizations.

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